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IRON TRADE REVIEW

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CLEVELAND, O., MARCH 1, 1928

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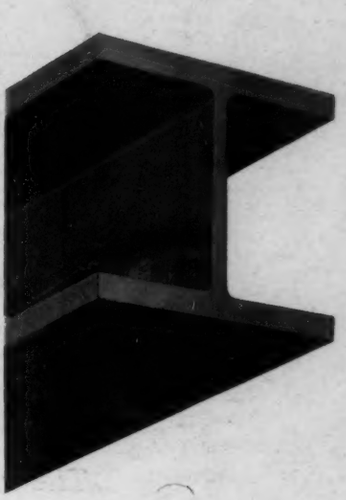

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Volume 82
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IRON TRADE REVIEW

Cleveland, O.
March 1, 1928

The Authority of Industry — National and International

Practical Features of Pickling

by WALLACE G. IMHOFF

Ninth Article—Fumes, Ventilation and By-Products

PICKLING fumes are a combination of the gases generated by the chemical action of acids on metals, and steam vapor. The chemical action of acids on metals may be subdivided into four general classes:

1. Gases generated by the chemical action in pickling cast iron with sulphuric, muriatic and hydrofluoric acids.

2. Gases generated by the chemical action in pickling steel with sulphuric and muriatic acids.

3. Gases generated by the chemical action in pickling steel containing copper with sulphuric and nitric acids; and the heavy poisonous, reddish brown fumes generated by the action of nitric acid on the metal copper, and copper oxide.

4. Gases generated by the chemical action in stripping defective galvanized articles so that they can be regalvanized.

The obnoxious, offensive, corrosive character of these gases is stimulated and aggravated by being thoroughly mixed, and in some cases chemically combined, with the steam vapors escaping from the pickling solutions. Most of the ordinary pickling fumes consist of escaping hydrogen gas generated by the chemical action of the acid on the steel base, and steam vapor, carrying considerable amounts of acid blown out by the miniature explosions of gas bubbles at the surface of the pickling solution. The season of the year vitally affects the volume of these fumes, conditions being much more aggravated in the winter than in the summer. The steam vapor is produced by the escaping of the steam used for heating the pickling solution.

Plant design, equipment, the number, size and capacity of tanks; production, and pickling methods all affect fume conditions. Pickling is executed in a separate building entirely, or in some part of the plant far enough removed from other departments so that no damage will be

done by the fumes. The kind of material to be pickled and galvanized determines how the plant will be designed and laid out. A sheet galvanizing plant requires an entirely different layout, equipment, and pickling methods from a job-galvanizing plant, a pipe galvanizing plant, or a wire galvanizing plant, or a plant galvanizing nuts, bolts, lag screws, etc., or one galvanizing metalware, or strip steel.

The most common plant design is a large building with ventilators in the roof. Some buildings are equipped with a large fan placed in the ventilator to expel the fumes. Such buildings have windows on the sides to allow the fumes to escape.

Eliminating Fumes

It is not uncommon to find the pickling done in an entirely separate building. Due to the strong corrosive action of the fumes the earlier buildings were usually wood, the roof being held up by 8 x 8-inch beams. The fumes were allowed to escape through large wooden hoods over the tanks, or saw-toothed ventilators, or windows built especially in the roof for ventilation. Most of these earlier pickling plants were very crude and practically all a miserable place to work in.

Some of the more modern plants have the pickling and galvanizing departments in the same building. The trend in modern pickling practice is to lower the temperature and increase the strength, and to use an inhibitor to keep down the hydrogen gas, and blanket the surface with a foam to hold down the steam vapor and fumes. Here again it might be mentioned that the kind of articles being pickled and galvanized determine the design and construction of the pickling equipment. In one industry the pickling tanks are entirely enclosed in large wooden hoods with a stack on them. This type of hood could not be used in another industry. The pickling tanks in some plants must be open because the work is handled entirely by overhead cranes, or a monorail.

The volume of fumes produced is vitally affected by the pickling equipment, the tank capacity, and the number and size of the tanks. It was previously mentioned how two small pickling tanks were being operated to give the same production as eight large tanks. As a consequence the small tanks had to be run at 10 to 12 per cent acid strength, at a temperature of 210 degrees Fahr.

The resultant fumes were bad, the tank life was short, up-keep and repairs were high, the work was hard to control from the standpoint of quality, and the labor conditions were such that it was hard to keep a steady man on the tanks. Frequent changes of picklers is a costly business, as poor pickling is reflected as defects and seconds in the galvanized product.

The quantity of fumes produced is also directly affected by the pickling method. One pickler will keep a tank well supplied all day long with apparently little effort; a new man on the job will create excessive fumes and still not be able to keep the kettle going.

Fumes are directly affected by the method of heating the pickling solution. Live steam at a high pressure, and a pickling bath operated at a high temperature, will create excessive fumes. If the acid is strong the fumes will "bite" the face and neck, and cause choking and coughing. To avoid these features some plants use lead coils to heat the solution. The coils are placed in the bottom, or on both sides of the tank, and the live steam, or exhaust steam is run through the coils. This method has the distinct advantage of eliminating a large part of the disagreeable fumes. When this method of heating is used the tank capacity should be large, as the speed of pickling is slowed down a little. This is no doubt due to the fact that live steam bubbling up through the solution more or less agitates it, and carries off the gases as fast as they are formed.

Tank Capacity Important

The character of the pickling solution, the temperature, the acid strength, the pickling time, the production required, the amount and kind of scale to be pickled, the tank capacity, the method of heating the solution, the time of heating and the skill of the pickler, all have to be taken into account in dealing with pickle fumes. A large production through small tanks must necessarily require pickling methods which produce fumes. The higher the temperature, the stronger the acid, and the shorter the pickling time, the worse the fumes become.

The human element can not change the pickling conditions when the tank capacity is too small, and the production is high. The best pickler in the world is forced to pickle with high acid strength, a high temperature, and in a short time, under abominable conditions in order to get out his required production if his tank capacity is small. On the other hand a poor pickler can pickle with little or no fumes when the tank capacity is large. A skilled pickler kept two galvanizing kettles supplied with material and had time to spare. The strength of his pickle solutions varied between 0.50 per cent and 1.00 per cent; the temperature was usually 120-130 degrees Fahr. Pickling time varied from 45 to 60 minutes. There were very seldom any fumes and he always seemed to have plenty of time. The pickling was done in two tanks 17 feet long, 4 feet wide, and 30 inches deep.

Fumes Are Destructive

In many industries considerable physical strength is also required as a quality desirable for the pickler. There are still many plants where the material is all handled by hand; in others the material is handled by machines. The kind of articles, the weight of the material when fabricated, the shape, the size, the kind of scale, the frailness of the finished pieces, all affect the equipment, the character of the pickling bath, and the methods of operation. Frail articles, easily damaged, should be pickled in wooden crates; or if in acid resisting metal crates in such a manner as to prevent bumping and moving around.

The kind of fumes depends on the kind of material being pickled and the acid used. Hydrofluoric and muriatic acids are generally used to pickle steel; nitric acid is used for pickling copper, or alloy steels containing copper. The volume of fumes depends largely on the equipment, acid strength, temperature and the pickler. Nitric acid fumes are extremely offensive and such pickling should be done under an enclosed hood. This is especially desirable when the nitric acid is strong.

The air in the pickling room greatly affects the volume of fumes produced, and also affects the vitality and endurance of the men. A hot pickling room is weakening. The pickle room of the future will have a hygrometer to show the humidity or moisture in the air at all times. With the proper ventilating equipment, scientific control of the temperature and acid delivery to the tanks, the pickle room can be made a pleasant place to work in.

Pickle room fumes are very destructive to material in process, building, steel work, and the clothes of the picklers. In some instances it is difficult to keep men on the job because the cost of buying new clothes is excessive. This is particularly true in plants where the material is handled by hand. When the ventilat-

ing of the pickle room is not effective the fumes may follow the line of least resistance and corrode material-in-process. An open door is usually the means of allowing these fumes to pour in on black steel, either in storage or in fabrication. The result is extreme corrosion, deep brown rust, and if allowed to continue long enough, complete destruction of lighter material. In one instance the fumes corroded all black material-in-process; in another the fumes corroded thousands of dollars worth of finished material; in still another the fumes attacked the black steel in storage and when some of it on the bottom of the pile was to be fabricated it was found to be unfit for use.

Still another example of this destructive action of the fumes is to be found in the corroded, frosted effect on the windows of an office almost a block away. The hydrofluoric acid fumes from the pickling department were carried against the front windows of the office and in a year or so the windows were practically useless. In buildings of steel the fumes attack the steel. Recently lead paints have been made available which may be used to good advantage in overcoming this condition. Pickling should never be done on the second or higher floors of concrete buildings. The fumes will penetrate and attack the concrete columns even though they have been given a coating of asphalt, or acid-proof paint.

The best way to keep down pickle-room fumes is not to make them. A large tank capacity will cost considerable at first installation, but with sufficient tank capacity the temperature may be lowered, the work will be much cleaner and of higher quality, there will be fewer seconds and defective articles, and the obnoxious, offending, corrosive pickle-room fumes will be reduced to a minimum. In addition to the changes already mentioned, the use of a good inhibitor will practically stop the hydrogen gas and hold down the steam vapor, and pickle-conditions will be still further improved.

A large tank capacity makes it possible to pickle at a lower temperature. The following is a concrete example of steam vapor and bad fumes when the solution temperature was almost at the boiling point:

Acid strength per cent	Iron content, per cent	Temperature, degrees Fahr.
3.00	1.00	210
2.50	4.00	210

The best pickling temperature is between 140 and 160 degrees Fahr. When the temperature falls under 140 degrees Fahr. the pickling time is greatly increased; on the other hand when the temperature is raised above 160 degrees Fahr., the fumes increase in volume; they become offensive at about 180 degrees Fahr. and above 200 degrees Fahr., they are excessive. Change of air may be accomplished by natural ventilation, or by ventilating apparatus and equipment.

Most pickling plants rely on natural ventilation to remove fumes through the roof. This type of ventilation is unsatisfactory. In a few instances a large fan is placed in the roof to suck the fumes off.

The design of pickle room equipment should be such as to establish air movement and air velocity. One fan should be installed to draw fresh air into the room, and another to exhaust the foul air. The velocity of the air must be such that the draft created is greater than any other natural draft caused by open windows or doors.

Ventilating apparatus and equipment should be made of special acid resisting materials. Fans in some instances have been painted with asphalt and other acid resisting paints, but such a procedure is only temporary. A modern installation includes a large tile ventilator extending out through the roof. The foul air and fumes are exhausted by a fan made of acid resisting metal. The earlier ventilators were large wooden hoods made of long leafed yellow pine or cypress. The ventilating equipment is affected by the kind of work being pickled. In some industries it is possible to entirely enclose each pickling tank with a large wooden hood; most pickling departments must have the surface clear as the work is handled and out of the tanks by overhead cranes.

The process of ventilation to be successful must draw the fumes from the tanks before they have had an opportunity to spread and before the steam vapor has had a chance to condense and form a heavy fog, or vapor which clouds the room. Fig. 24 shows a ventilating system with the fan off and Fig. 25 the same room with the fan on. The fumes can be plainly seen in the first instance, while in the second, the atmosphere is clear.

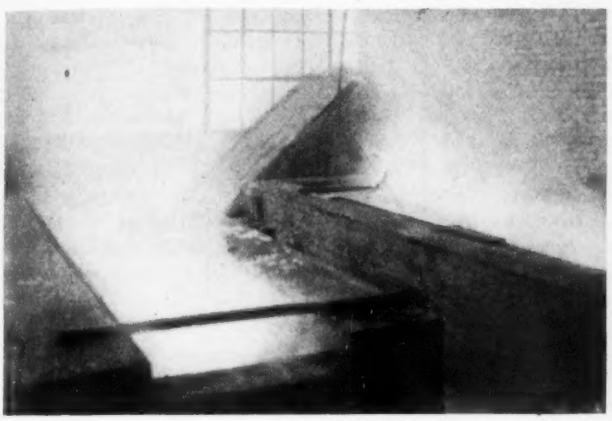

FIG. 24—PICKLING DEPARTMENT WITH FAN IDLE

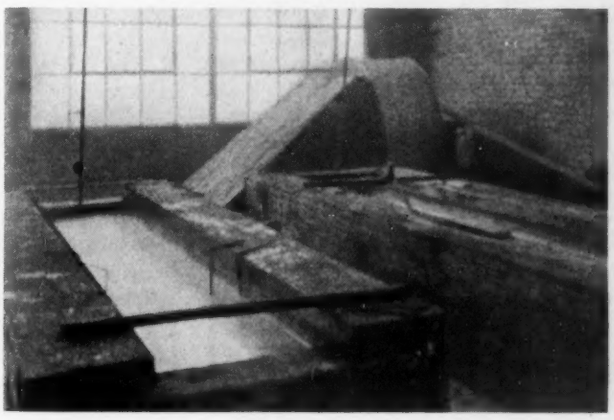

FIG. 25—PICKLING DEPARTMENT WITH FAN OPERATING

Ventilating efficiency depends upon the efficiency of the fan and duct system, and the proper practical application of ventilating principles. The principles of ventilation involve a thorough understanding of the wind volume, wind velocity, total wind capacity, wind flow, factors controlling increase and decrease of velocity, factors controlling increase and decrease of volume, and the proper co-ordination of the parts of the system.

The efficiency of a ventilating system already installed may be increased by providing both air intake and an air outlet; by maintaining the proper relation between the intake and the outlet; by installing the proper size of pipes and ducts throughout the system; by maintaining the proper velocity of air through the system; by moving the proper volume of air through the system in a given length

(*Concluded on Page* 565)

Daily Cost System Affords Close Check on Operating Expense

By Ralph C. Myers

IN RECENT years business has caused the operating heads of many steel companies to economize in every way possible and to exert every effort to keep their costs at a minimum. This condition has required plant managers and superintendents to carefully analyze each item of cost as received from the cost department, and they are also requesting cost departments, more and more every day, to give additional detail in their reports. Where cost figures at one time were available anywhere from the fifteenth to the last of the following month, today a great effort is being made to have them at the earliest possible moment, and several large plants are sending reports to their mills not later than the tenth and as early as the fifth of the month. This has been made possible to a certain extent by mechanical calculating equipment, but the main cause lies in better organized cost departments and in the speeding up of reports from mill offices to their final destinations. In some cases weekly production figures are reported. Some even go further and require these figures daily. In fact in one organization a daily cost sheet, giving more detail than the average monthly report, and with a marked degree of accuracy and value, has been developed.

On first thought the installation of a daily cost system would seem to mean added expense and the returns would appear questionable in value. However, while it would require possibly more clerks and some additional calculating equipment, the value of the operating statistics made available greatly offsets the increased expense. With the daily system an executive has absolute results of any effort on his part within 24 hours. As the costs are accumulative (the report of a given day showing average cost of all previous days of that month) the cost of any given part of a month is easily arrived at by deduction. Consequently the figures on periods of experimental operating procedure are available almost immediately. If only a monthly report were used, this experimental period would have to extend over a full month. One change in operating methods possibly may be an expensive one, and in a month's time the increased cost due to the change would cover the maintenance of daily costs for a long period.

For example in a plant using the daily system, the portions of an open-hearth charge were changed in an effort to cut costs, and the daily cost report showed an immediate increase in scrap and decrease in product to such a point that the change was not found economical and was discontinued within 48 hours after the trial. Had the superintendent waited on a monthly report to catch this increase in cost it would have meant a large loss both financially and in furnace capacity.

The raw material cost of an open-hearth charge is made up from a heat report compiled by the open-hearth production clerk. The different materials are priced at market value to which is added a set per cent covering loss in handling and weather deterioration while piled in stockyard. The market value is changed weekly, while the per cent loss is arrived at by past experience and remains the same except on rare occasions. The open-hearth heat report is very complete, covering all the information required on one report.

The open-hearth production statistics under the heading "Open Hearth Charge and Production" in Fig. 2 are of value from a production control standpoint. After becoming familiar with the makeup of the form the history of each individual furnace can be readily comprehended at a glance. "Analysis of Charge" is another open hearth item which may be developed into an interesting and valuable feature of the daily cost sheet.

The average cost of charge of total furnaces is used in making up the final ingot cost. After taking credit for scrap and adding "Cost Above Metal" (will discuss this later) to "Cost of Charge," the net ingot cost

How Daily Plan Works

IF COST information is to be of maximum value in affording control of operating details, it must be available to the executive officers promptly and at frequent intervals. Control based on monthly figures too often involves abrupt changes in routine which not only affect morale in the plant but result in doubtful economy.

The accompanying article explains how the daily cost system has been employed successfully in two establishments. The author, Ralph C. Myers, 1518 Ridgewood Ave., Lakewood, O., has been identified with the development and operation of this system.

DEPARTMENT		PRODUCTION (GROSS TONS)						UNIT TURNS			PIECES		
		TODAY	THIS MO. TO DATE	LAST MO. TO DATE	PER DAY AV.	PROB. TONNAGE	PRODUCTION LAST MO.	TOTAL	OPERATED	OPER. LAST MO.	TOTAL	WT. EACH THIS MO.	WT. EACH LAST MO.
Open Hearth Prod.	G. T.												
Open Hearth Ship.	G. T.												
Ingot Slices Ship.	G. T.												
Blooming Mill Prod.	G. T.												
Blooming Mill Ship.	G. T.												
Hot Strip Mill Prod.	N. T.												
Hot Strip Mill Ship.	N. T.												
Cold Strip Mill Prod.	N. T.												
Cold Strip Mill Ship.	N. T.												
Pickling Prod.	N. T.												
Blue Annael Prod.	N. T.												
Finish Annael Prod.	N. T.												

FIG. 1—THIS PART OF FORM PERMITS COMPARISON OF PRODUCTION AND SHIPMENTS IN CURRENT AND PREVIOUS MONTHS

is completed and this figure is used each day as the cost of charge for the blooming mill.

The greatest task in compiling these figures is the assembling of "Cost Above Metal." Due to the limited time available in which to properly accumulate and set up this seemingly endless volume of figures a large proportion of the effort of the statistical department must be concentrated on this section of the report. As a rule all production and other data has been received and finished long before the "Cost Above" figures are completed. After trying a number of methods of assembling the numerous items involved, it has been found speedier and more accurate to assign certain picked clerks to one portion of the work and hold them responsible for its completion up to the final distribution.

For example one man may devote his efforts to distribution of labor, another to stores distribution, etc. After a short period of training these men will have their work so planned that they actually work on schedule and different sections of figures will be forthcoming at nearly the same hour each day. By carefully laid plans and scheduling of work each step of assembly can be disposed of in a smooth and machine-like manner, barring of course, occasional unavoidable delays.

The largest and most complicated distribution needed in making up a cost is labor. In making up the time cards both cost and payroll are considered from a standpoint of time saving and accuracy. Instead of using cards covering an entire pay period, a new card is received each day by the employe upon entering the plant. These cards carry spaces for man number, name, and clock rings as usual, together with ample space for a complete distribution of his day's work. Space also is provided for hourly rate and final extensions on each item of work performed. As indicated in Fig. 3, this card carries a complete history of an employe's time at work. The slow and old style process of checking time slips against time cards is eliminated as a man's time may be checked against foreman's distribution on the one card each day at a glance. These cards are taken up each morning by a member of the statistical force who usually starts to work an hour earlier than the other clerks in order to get a good start on labor distribution. After the cards are rated and extended the distribution is compiled and checked with the grand total of the cards. The time cards then are sent to the payroll department together with our total. The cards for men paid on tonnage basis are marked "Tonnage" and their distribution is taken care of after receiving production tonnage from the various units. These amounts are a combination of tonnage produced and complete rates of crews shown by time cards.

The stores distribution is compiled from requisitions similar in design to the forms used throughout steel mills. The only change in program here is that the requisitions are priced and extended each day by the stores department and a daily distribution

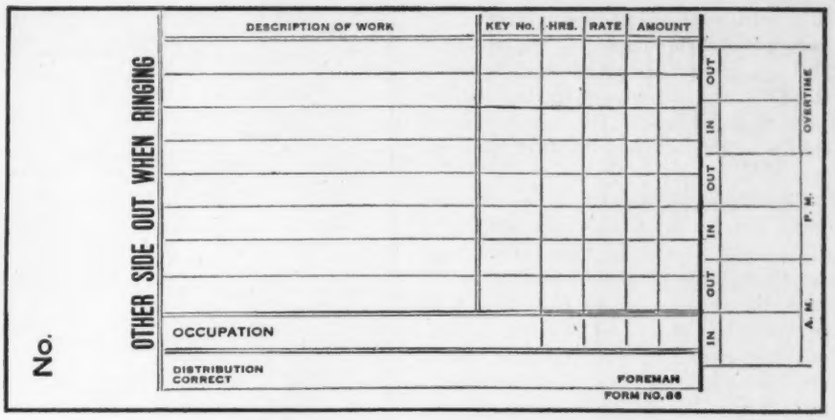

FIG. 3—DAILY TIME CARDS ARE USED

STEEL WORKS DAILY STATISTICAL REPORT DATE_____

OPEN HEARTH CHARGE AND PRODUCTION

Fce. No.	PRODUCTION TO DATE G. T.					TOTAL HOURS THIS MONTH	TOTAL HEATS			G. T. PER HEAT			HOURS PER HEAT			COST OF CHARGE PER G. T. INGOTS				
	MERCHANT STEEL	WHEEL STEEL	TOTAL THIS MO.	TOTAL LAST MO.	TOTAL THIS YR.		THIS MO.	LAST MO.	THIS YR.	THIS MO.	LAST MO.	THIS YR.	THIS MO.	LAST MO.	THIS YR.	MERCHANT STEEL	WHEEL STEEL	TOTAL THIS MO.	TOTAL LAST MO.	TOTAL THIS YR.
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
Total																				

Open Hearth Above Metal Cost		MEN		PROD. LABOR		REPAIRS			COAL	GAS	POWER	WATER	FUND CHRG'S	PROD STORES	COST ABOVE PER G. T.			PRODUCTION		TOTAL COST	
		DAY	STD.	THIS MO.	LAST MO.	LABOR	MAT'L	SHOPS							THIS MO.	LAST MO.	YR.	THIS MO.	LAST MO.	THIS MO.	LAST MO.
Stocking	Direct																				
	Total																				
Melting	Direct																				
	Total																				
Casting	Direct																				
	Total																				
General	Overhead																				
	Yards																				
	Trans.																				
	Safety																				
	Total																				
GRAND TOTAL																					

FIG. 2—OPEN HEARTH CHARGE AND PRODUCTION INFORMATION AND "ABOVE METAL" COST. "ABOVE METAL" COST FOR BLOOMING MILL, HOT AND COLD STRIP MILLS, INCLUDING FINISHING OPERATIONS ALSO ARE INCLUDED

is furnished to the statistical department. The cost of maintaining the storeroom is added each day to distribution of stores disbursed, on percentage basis. This maintenance figure is taken from daily labor distribution.

The item of repairs is an important cost figure in any steel mill. The "Chart of Operating Accounts" was set up to give us the labor and stores from the respective distributions. Costs covering the numerous shops throughout the plant such as machine shop, electrician's shop, etc., are assembled and then redistributed to various producing units on the basis of service rendered by mechanics from each respective shop. This figure appears on the final report under the heading "Shops" and is considered a part of the repair cost. It includes power, coal, gas, etc., consumed by the different shops and maintained cost on their own equipment. All mills have unexpected and costly break-downs in equipment which cause a large repair cost, not covered by a fund. These repairs, as a rule, are much too costly to include in one month's figures, let alone in one day and are usually spread over several months' operations, depending on the amount involved. This same plan is carried out in daily costs, except that each month's portion is split up into daily amounts and taken up accordingly. Thus no excessive repair item is permitted to cause large fluctuations in the daily figure.

ANALYSIS OF CHARGE		THIS MONTH	LAST MONTH	THIS YEAR	LAST YEAR
Cast Iron	Pig				
	Wheel				
	Scrap				
	Borings				
	Moulds				
Steel	Home				
	Heavy Melt.				
	Turnings				
	Bushelling				
	Open Hearth				
	Rails				
	TOTAL				

FIG. 5—THIS PROVIDES FOR ANALYSES OF OPEN-HEARTH CHARGES

The consumption figures of coal, gas, power and water are in a great many cases difficult to arrive at with any degree of sureness and real value. They are hard enough to get once a month, let alone every day. However, if a plant is well equipped with meters, which are read at certain hours each day, this difficulty is minimized. The electric power consumed is reported daily from the chief electrician's office, while the other figures covering coal, gas, water, etc., are reported by the master mechanic's office. Prices used in setting up a value on these items are those of the previous month as it has been found that fluctuations from month to month do not have a serious effect on results obtained. The money values of these distributions then are carried forward to either producing units or auxiliary departments, whichever the case may be.

Funded charges are merely a combination of production and a set rate per ton produced, this rate being a result of past experience and is obtained without difficulty. Depreciation of rolls, dies and furnaces are taken care of under this head.

Production stores are taken from the stores distribution report and require little effort in obtaining on account of the plan of the "Chart of Accounts."

The cost of auxiliary or nonproducing departments is worked into final producing center costs by a set program worked out at the time of installing this system. As these departments dovetail together in a number of cases, care is necessary in order to keep from losing certain items, or distributing a department before its assembly has been completed. The factors adopted for distribution are varied and obtained or decided upon only after some experimenting. However, with all the information accumulated each day, a satisfactory set of factors in most cases is at hand.

As each distribution going into "Cost Above Metal" is completed, the total figures are entered in their respective places on a work sheet. These sheets are made up on multi-column paper, carrying headings corresponding to setup on final report, and carry total figures only. Each work sheet covers one producing department. Space is provided between the various items to take care of figures which finally land under the same heading, but arrive from different sources of information. After a distribution has been entered on the work sheet, the grand total of that particular distribution is entered on a control record. When all items of

(*Concluded on Page* 565)

ITEM		PRACTICE PER CENT. THIS MONTH	LAST MONTH	THIS YEAR	RECORD MONTH	TOTAL COST PER GROSS TON THIS MONTH	LAST MONTH	THIS YEAR	RECORD MONTH
Gross Charge									
O. H. Scrap	CR.								
Net Charge									
Melting									
NET INGOTS									
Ingots B. M. Basis									
Blooming Mill Conversion									
Gross Semi-Finished									
Blooming Mill Scrap	CR.								
Net Slabs Sheared									
Gross S. F. To Inspection									
S. M. Inspection Scrap	CR.								
NET SHIPPED—SEMI-FINISHED									
Slabs—S. M. Basis									
Hot Strip Conversion									
Gross Hot Strip									
Hot Strip Scrap	CR.								
Net Hot Strip Finished									
Gross H. S. To Inspection									
H. S. Inspection Scrap	CR.								
NET SHIPPED HOT STRIP									
Pickling Conversion									
NET SHIPPED H. S., P. and A.									
Strips—C. M. Basis									
Strips—From Salvage									
Strips—Total Charge									
Cold Strip Conversion									
Gross Cold Strip									
Cold Strip Scrap	CR.								
Cold Strip to Salvage	CR.								
Cold Strip Losses	CR.								
Net Cold Strip Finished									
Gross C. S. To Inspection									
C. S. Inspection Scrap	CR.								
NET SHIPPED COLD STRIP									
Cost of B. M. Losses									
Cost of Insp. Losses									
Cost of Losses Total									
Cost of S. M. Losses									
Cost of Insp. Losses									
Cost of Losses Total									
Cost of C. M. Losses									
Cost of Insp. Losses									
Cost of Losses Total									
Total Cost of Losses									

FIG. 4—FINAL COSTS FOR OPEN-HEARTH AND FINISHING DEPARTMENTS ARE CONDENSED ON THIS PART OF THE FORM

Say Deficits Justify Price Rises

* * * * * * * * *

Auto Output Still Is Improving

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Prefer Motor Scrap to Pig Iron

Detroit, Feb. 28

DISTRESSING as that $5,000,000 deficit in the final quarter of 1927 may have been to the United States Steel Corp., it has proved a powerful price weapon for sellers of steel, especially the lighter products, in the Detroit district.

As they will do, automotive purchasing agents have restrained their enthusiasm over the higher prices now asked for steel. They are not saying they will not pay them, but they ask the reason for them. It is a fatal opening.

"If so strong and well-rounded an institution as the Steel corporation could not earn its dividend last quarter how do you suppose we small producers fared?", is frequently the brisk rejoinder. "We steel people have been working for the automobile industry for about a year and now we've decided to work for ourselves."

"But supposing we won't stand for the advances?"

"Then we'll do one of two things—cut wages or shut up shop."

Right there the purchasing agents wince—inwardly, of course. They know, as do the sellers of steel, that a reduction in wages is the last development the automobile industry wants, for the first reaction would be a curtailment of automobile buying.

Solicitous as the average purchasing agent is for the last nickel, he does not relish being charged with a wage reduction. It does not require much imagination on his part to appreciate the sentiment of the real heads of the automotive industry were they to be apprised that unnecessarily sharp buying on the part of their subordinates had reduced the buying power of the country by some millions.

* * *

ONLY time, of course, will tell whether the higher prices being asked for steel will "stick" but the odds are that they will. The advances are not reflections of a decided expansion in demand but rather a determination to make a profit. Plate, shape and bar prices usually level up with those in other districts. Sheets are in fewer and firmer hands, and the responsibility rests with the larger producers. Strip, both hot and cold, promises to be troublesome because new producers are virtually compelled to buy their way in. Wire and nails come into the Detroit district from too many points to hold firmly to a Cleveland base.

Sellers of steel are not wholly blameless in the price situation. When a buyer, even of comparatively modest lots, is periodically courted by a dozen or more salesmen for the same product he logically plays one against the other. Pig iron prices are more stable than any other because there are only two sellers. Sheets and strip present the other extreme.

* * *

ONE cold rolled strip steel interest maintains that producers err on the side of modesty. He would "shoot" prices $10 to $12 per ton instead of only $2 to $3, thereby providing a real incentive for holding. The difficulty of putting a $10 to $12 advance across he readily concedes, but he also asks whether at the end of a year mill earnings would not be higher.

* * *

JANUARY with a combined truck and passenger car output of 225,039 units almost doubled the 133,547 of December and came close to the 238,926 of last January. Whether the 304,763 units of February, 1927, has been reached this year is doubtful, but some improvement over January has been registered.

Normally March and April are the best months—the record being 441,307 units in April, 1926—and nothing has developed to indicate 1928 being an exception. At least a good first half year is believed assured. Nevertheless, a good many reservations are harbored, and the usually far-sighted automobile makers are attuning pro-

(*Concluded on Page* 572)

Machining Manganese Steel on a Commercial Basis

By A. S. Martin

FOR some time tests have been conducted by the Firth-Sterling Steel Co., McKeesport, Pa., on the cutting capacity of a new type of high speed steel. This material was developed in the effort to produce a cutting medium that would give greater production than standard high speed steels.

During the progress of the experiments, it was discovered that the standard test bars were not a sufficiently rigorous test of the capacity of this steel and therefore it was decided to try manganese steel.

The test bars used were 3-inch diameter rolled manganese steel with a content of about 12 per cent manganese and 1.20 per cent carbon. The manufacturer of these bars warns the buyer, ". . . It cannot be drilled, milled, planed or machined with an edged tool and the only method of finishing is by shearing and grinding."

On Commercial Basis

The cutting test was unusual. All effort was directed to prevent tool failure. The test had for its object simply the practical purpose of demonstrating that manganese steel can be machined on a commercial basis. Commercial machining of manganese steel was held to imply that the tool must remove metal at a rate commensurable with the grinding process for at least two hours between grindings of the tool, so that a workman supplied with four such tools could do a day's work with no time lost for regrinding.

Nor were ideal operating conditions sought. The tests were carried on under circumstances that would obtain in almost any ordinary machine shop. The lathe used was a 24-inch back-geared, cone pulley belt driven and gear feed machine in fair condition. The lathe tools were forged from ⅞ x 1¼-inch bars of the new steel. These tools were similar in form to those used on heavy duty work and in many cutting tests with a front and side clearance of between 6 and 8 degrees, a top back rake or clearance of 8 degrees and a top side rake or angle of 14 degrees. The nose had a radius of 7/16-inch (half the width of the tool). The cutting edge was on the center line of the work.

During the progress of the tests, cutting speeds ranging from 7½ to 28 feet per minute were tried. It was found that the range from 7½ to 15 feet per minute gave the best results. When suitable cutting speeds were established, various depths of cuts and feeds were tried. Within the speed range mentioned above, the tools stood up satisfactorily on feeds ranging from 1/60 to 1/50-inch, taking cuts from 1/16 to 5/32-inch.

Describes Experiments

IT IS well known that manganese steel has resisted the efforts of metallurgists and toolmakers to machine it in a practical way. While it is true this material has been cut by high speed steel, the speeds have been such and the necessity for regrinding of tools so frequent that the work has not proved satisfactory.

For this reason the experience related in the accompanying article is of unusual interest. The author is mechanical engineer, engineering department, Firth-Sterling Steel Co., McKeesport, Pa.

The chip formed was a very tight and compactly curled ribbon in color deep dark blue or the brownish gunmetal peculiar to manganese steel. This chip was oily smooth on the under side and would break only when it became entangled. Five to ten minutes before the tool was ready to be taken out for regrinding, the chip would begin to straighten out into a long wavy ribbon which, under an electric light, would show a dull red color three or four inches coming from the cut.

At no time during the test were the tools allowed to fail completely. At the first sign of failure they were removed and reground to carry on with further tests. When this stage of failure was reached the cutting edge was slightly rounded and at a small spot a concentrated erosion and a slight discoloration were evident.

The great pressure against the cutting edge suggested that the work might push the tool away on fine cuts. To determine this point, the tool was set to take a cut 1/64-inch deep which it would hold accurately and without difficulty across the entire length of the test bar, indicating that manganese steel can be machined to close size limits.

Considerable attention was given to the heat treatment of the tools. While the treatment of the new steel does not differ radically in procedure from that of other high speed steels, it does require a definite increase in the heats used. All the tools tried made better records on the second and third grinds than on the first, from which it was deduced that the high quenching heat required had a tendency to lessen the hardness on the surface of the steel.

Firm Chucking Desirable

In general, it was observed that for best results the work must be firmly chucked, the tool well supported with little overhang and the machine should be rugged. Chattering caused a considerable decrease in the life of the tool. All tests were run dry.

Summarizing the results, we find that with tools made of the steel under test, manganese steel can be commercially machined using cutting speeds from 7-1/2 to 15 feet per minute with depths of cuts up to 5/32-inch and feeds of 1/60 to 1/50-inch. Within the range of combinations of these variables the time of cut between grindings of the tool runs from one to nine hours.

Similar results have been secured upon machining manganese steel castings, some of them being scrap castings containing sand inclusions and other defects that put the cutting tool to an extremely hard test. Further tests now in progress give evidence of equally satisfactory performances on drilling and other machining operations. The ability to machine manganese steel alone offers a fertile field for this new cutting medium, but its wider use will undoubtedly be to machine material just on the border line of machin-

ability—just a little outside the safe cutting capacity of standard high speed steels. Such work would include machining billets, car wheels, heat treated steels (including the alloy automobile steels in the heat treated forms), phosphor-bronze gears and other products which require that the tool cut closely to size under severe conditions.

Cost Information Affords Check on Expense

(*Concluded from Page* 562)

a day's cost have been completed and entered, the work sheet and control sheet are balanced, making a quick and sure check on all final entries.

Up to this point all figures handled have been total costs, and now everything is ready for the final report. The cost per ton is entered on the "Daily Statistical Report" carried out through three decimal places and is the result of calculations obtained with the combination of the tonnage produced, the final work sheets, and a slide rule. The only total cost shown is in the columns to the extreme right of the report. After working out the "Total Cost per Ton Produced" on the back of the report, using in each case practically the same combination of figures as previously explained in open hearth ingot cost, and filling in the numerous items covering production data, the report is completed ready for typing and distribution to various executives.

No doubt the question has come to the reader's mind as to how long and how many men it would take to get out this report each day. In the plant in which the above discussed idea was carried out, from 1500 to 2000 men were employed. There were eight clerks employed in the statistical department to get the new idea started. The writer was the only one in the department familiar with the idea at that time. Later the force was reduced to five owing to added mechanical and electrical office equipment, and a better understanding of his work on the part of each man retained. The report has been entirely finished but not typed by 12:30 noon and on an ordinary day's output the department starting at 7 a. m. This time, however, may be as late as 5:30 p. m. but no day's work ever lapsed over into the next morning.

In a smaller plant, not having such varied production and employing about 400 to 600 men, it has been completed by 10 a. m. Three clerks were used in the smaller plant and they also compiled the plant payroll. The remainder of the day was used in preparing work sheets, etc., for the next day's work, and compiling a large amount of statistics for monthly reports, based on figures acquired in the vast volume of data required in the daily cost.

The accuracy of the system has been proved by the fact that monthly cost reports were compiled by the bookkeeping department and the daily costs reported on the first of the month for the past month have checked within one cent per ton on ingot cost and two cents per ton on slab cost. In a smaller plant which on a certain month had a "Cost Above Metal" total figure of approximately $100,000, the daily costs showed the same figure with a difference of $2.63. This should eliminate all doubt of its value as to accuracy as the above noted variations are close enough to cause "Daily Costs" to be of accounting value and not just an operating cost-cutting idea.

Remarkable improvements have been made in steel making methods during the last few years, causing a reduction of man power, greater output in the same length of time and a finer grade of product. However, methods of assembling production reports and costs are much the same as they were years ago.

The executive of a plant employing the daily cost system comments on it as follows:

"Unless a person is familiar with steel plant operations he cannot realize the difficulty connected with the institution of a scheme of this kind but the results have been very gratifying and have assisted us immensely in our effort to secure the lowest possible costs.

"I have discussed this scheme with a great many steel mill cost accountants and they all look on it as being impossible but regardless of their views we are utilizing it as an every day tool in our plant."

Features of Pickling

(*Concluded from Page* 559)

of time; by installing a fan which will regulate the intensity of the delivered air governed by the fan speed in revolutions per minute; and the air volume delivered or capacity delivered as governed by the fan size. The most efficient results will be obtained when all these factors contributing to the whole are in proper balance, and function properly when in operation.

Pickle fumes never have been considered as a by-product. An efficient ventilating system might possibly direct the fumes into water, thereby recovering the acid carried off with the steam vapor. The only inducements for doing it would be from the standpoint of controlling the fumes in the event of objections from the community in regard to allowing the acid vapors to escape into the air.

The other pickle room by-products are to be found in spent acids, and undissolved material found in the bottom of the tanks. The spent sulphuric acid solutions contain a percentage of unused sulphuric acid, and ferrous sulphate; the spent muriatic acid solutions contain same unused muriatic acid, and ferrous chloride, or a mixture of ferrous sulphate and ferrous chloride. In either case so long as hydrogen is generated and reducing conditions are maintained, the iron is in the ferrous form. The muriatic acid solution is contaminated with ferrous sulphate from the pickle when there is no water wash between the pickle and the muriatic acid solution.

Pickling by-products resolves itself into a question of the amount of acid wasted, and the recovery of this acid; the amount of iron in solution and the recovery of this iron; and the damage done to the sewer systems and pollution of rivers. Various methods have been suggested to reclaim both the acid and the iron values in these waste pickle liquors. It has been estimated the loss in pickling sheets averages 56 pounds per ton with careful managements.

One of the oldest patents covering the utilization of waste pickle liquors was to precipitate the iron as ferrous hydroxide with lime. E. E. Corbett, in a bureau of mines technical paper, states:

"As the percentage of ferrous sulphate in the solution increases due to decomposition of acid which is continually added to preserve the pickling energy, the specific gravity and viscosity of the bath tend to rise to a point at which pickling begins markedly to slow down. The beginning of a sluggish circulation becomes evident after a specifict gravity of 1.17 is reached; the mobility of the acid falls off until at 1.25 to 1.27 specific gravity, activity at the specified temperature, 170 to 185 degrees Fahr., is practically at an end. It is idle to expect anything but the feeblest action from a bath whose density runs in the neighborhood of 1.25 to 1.27, regardless of how much acid is added to it. The acid is sent to the sewers as waste. New acid, 2 to 4 per cent, represents specific gravities of solution between 1.010 and 1.032 before any metal has been dissolved."

The actual percentage of ferrous sulphate in the solution varies for different industries. In the metalware industry the ferrous sulphate value may reach 12 to 16 per cent before the tank is emptied; an authority on enameling practice states the tanks should be emptied when the ferrous sulphate reaches 8 per cent.

Obsolete Tools Cause Inefficiency

ORDERS for machine tools in January, it is to be recalled, were the best for any month since May, 1920, and considerable optimism was expressed that the early months of 1928 were to see a continuation of the high level. Already this confidence has been assaulted, for it appears now that bookings in February were well below the totals for the previous month. It is difficult to assign definite reasons for this situation for a number of factors are involved. It is reasonable to suppose, however, that January business was somewhat above normal, due to the fact that purchases of equipment pending in December were postponed until January to place the expenditure in the 1928 account rather than 1927.

Commenting upon the January record, E. F. DuBrul, general manager of the National Machine Tool Builders' association, said the following:

"Our index of machine tool orders showed a considerable rise in January. The preliminary figure for the month indicates more dollar volume of machine tool orders placed than any month since May, 1920. Naturally, a dollar volume is a product of the units ordered multiplied by the price. In some cases price advances might account for part of this rise, but increase of units ordered account for most of this rise in our index."

Automotive Purchases Light

Mr. DuBrul stated that the automotive industry's requirements last year were apparently a smaller percentage than usual and that it likely would purchase more heavily this year. However, this industry furnished little in the way of new business in February. Certain manufacturers did buy new equipment, but the industry as a whole was not a prominent buyer.

It is a well known fact that the manufacturing industries of the United States have a large over-capacity of obsolete equipment, but at the same time there is a shortage of efficient equipment. Machinery users must be educated to the wastefulness of producing with inefficient equipment, but this is a slow process. The modern machine tool salesman must be more than an order taker—he must be able to teach a prospective customer how to do a job more quickly and more cheaply.

Technical societies are doing much

(*Concluded on Page* 569)

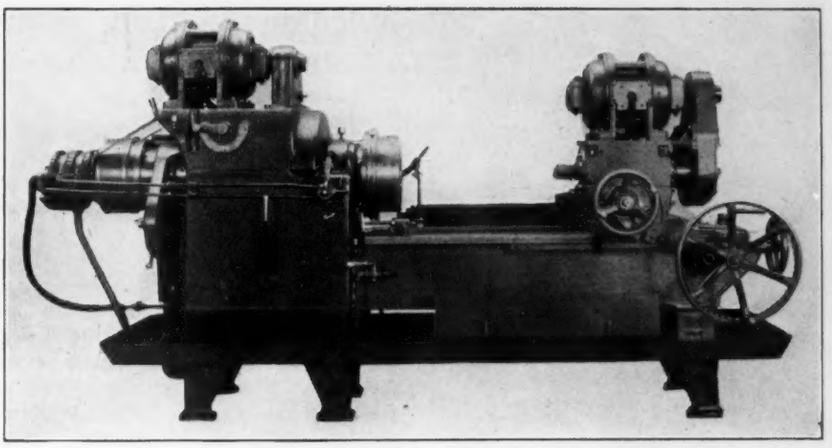
Iron Trade Review's Calendar of New Equipment

No.	Item	Builder	Comment	Date Described
44.	Open-throat shear	Mackintosh-Hemphill Co.	Improved-type, large capacity	Feb. 16
45.	Trigonometric calculator	J. S. Ronay	Simple means for calculating	Feb. 16
46.	Milling machines	Kearney & Trecker Corp.	New sizes of recent model	Feb. 16
47.	Die casting machine	Madison-Kipp Corp.	Improved-type, automatic	Feb. 16
48.	Fuel value calculator	Coal Specialties Co.	Computes fuel value of coal	Feb. 16
49.	Pipe line purifier	Blaw-Knox Co.	Removes moisture and solids	Feb. 16
50.	Straightening press	Sutton Engineering Co.	Straightens pipes, tubes, bars, shapes, etc.	Feb. 23
51.	Drum switches	General Electric Co.	For control of small cranes, hoists, machine tools, etc.	Feb. 23
52.	Sheet pack opening machine	Aetna Standard Engineering Co.	Handles packs up to 8 feet wide	Feb. 23
53.	Squirrel cage induction motors	Allis-Chalmers Mfg. Co.	Start on full line voltage	Feb. 23
54.	Geared head production lathe	Springfield Machine Tool Co.	Equipped with Timken roller bearings on spindle	Feb. 23
55.	Cupola blower	General Electric Co.	Automatically insures constant supply of air	Feb. 23
56.	Portable coiler for strip	D. A. Clark Co.	Handles cold strip up to 24 inches wide	Feb. 23
57.	Thread miller	Smalley-General Co.	Performs heavy work without chatter	March 1
58.	Bus bar supports	Westinghouse Electric & Mfg. Co.	Modified hollow square type	March 1
59.	Geared head lathe	Cincinnati Lathe & Tool Co.	Motor mounted in cabinet leg	March 1
60.	Spiral weld iron pipe	Naylor Spiral Pipe Co.	Grooved ends for victaulic couplings	March 1
61.	Limit switch	General Electric Co.	For magnetic control	March 1
62.	Straightening machine	Sutton Engineering Co.	Accurate straightening in single pass	March 1
63.	Radial rolling machine	Aetna-Standard Engineering Co.	Specially designed for disk sections	March 1
64.	Welding electrodes	Fusion Welding Corp.	Mild steel; for arc welding	March 1
65.	Valve face grinder	Landis Tool Co.	Semiautomatic and hydraulic	March 1
66.	Induction motor starter	Lincoln Electric Co.	Adjustable with automatic features	March 1
67.	Axle lathe	Consolidated Machine Corp.	Heavy-duty, center drive, oil-geared	March 1
68.	Gas welding outfits	Oxweld Acetylene Co.	For sheet metal and automobile repair	March 1

Improved Thread Miller Is Unusually Rigid

No. 57

The Smalley-General Co., Bay City, Mich., announces an improved thread miller which like its predecessor is capable of performing heavy work without chatter. Another feature of the machine, which is shown in the accompanying illustration, is that it is possible to change quickly from one job to another. The machine will mill outside or inside, right or left-hand threads, and, when equipped with a taper attachment, will mill straight or tapered threads up to 4 inches taper per foot. An important improvement in the tool is the roller bearing milling head. The milling spindle and pinion shaft driving the head also are mounted in tapered roller bearings. Work after milling is within close limits. The tool will mill external threads from ⅛ to 8 inches diameter and internal threads from ½ to 12 inches diameter. Pitches run from 30 per inch up. Several types of chuck may be used. Although the machine is primarily of the chucking type, it can be furnished with a tailstock and line center. A wide range of speeds for both turning and milling are provided. Both motor-driven and belt-driven models are available.



No. 57—Improved thread miller for unusually heavy work

Bus Bar Supports Are of Hollow Square Type

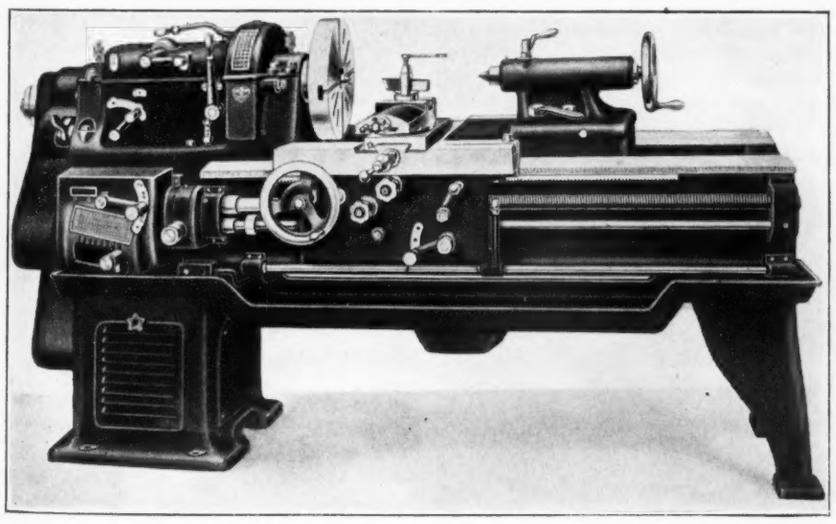
No. 58

Westinghouse Electric & Mfg. Co., East Pittsburgh, has developed a new line of bus bar supports of the modified hollow square type. These consist of heat treated aluminum alloy clamps which are insulated from the 1¼-inch pipe from the mounting support by means of micarta tubes. The bus support is designed for 4 x ¼-inch bus bars and for a maximum of 400 volts, alternating or direct current.

Announcing New Line of Geared-Head Lathes

No. 59

The Cincinnati Lathe & Tool Co., 3207 Disney street, Cincinati, has announced an improved line of geared-head lathes in which the motor is mounted in the cabinet leg under the head. These lathes, one of which is shown in the accompanying illustration, can be furnished in 16, 18 and 20-inch sizes, equipped for either silent chain or belt drive. The quick-change gear box gives a wide range of threads and feeds. Twelve spindle speeds in as many seconds are secured to cover practically every machine shop requirement. All gears and shafts in the head are made of manganese-chrome alloy steel, heat treated and ground to size. Gear teeth are specially cut. A plunger locks the spindle to facilitate removing chucks and faceplates without straining the shafts or gear teeth. The clutch is of the compression disk type that transmits to the work the full horsepower rating of the motor. An index plate on the front of the head shows the lever position for each spindle speed. These lathes are supplied with or without oil pans and in 2-foot lengths of bed.



No. 59—Geared-head lathe with motor inclosed in the leg

Make Special Iron Pipe in Larger Sizes

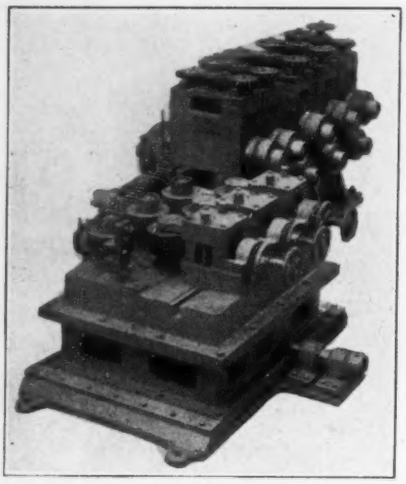
No. 60

Naylor Spiral Pipe Co. announces that its spiral-weld iron pipe now is available with grooved ends for victaulic couplings in sizes from 4 to 12 inches diameter. This combination is adapted for use where pipe is needed for handling air, water, steam, oil and gas, and where quick easy installation is required. The pipe is light weight and is smooth inside, thus reducing friction. The couplings are also light weight and an exact alignment is not necessary for their installation.

Designs Limit Switch for Magnetic Control

No. 61

General Electric Co., Schenectady, N. Y., has designed a new limit switch which is said to furnish a simple reliable means for controlling the limits of travel on such applications as motor-operated window or door-opening apparatus, valves, etc., where magnetic control is used. The switch is provided with two normally-closed contacts, one for each extreme of travel. These contacts are operated by two cams which are adjustable with respect to each other. As a further refinement, each contact has a micrometer screw making possible very close adjustment of the opening point. The entire mechanism is en-



No. 62—Straightening machine

closed in a cast-iron box with sheet steel covers front and back. Both contacts are silver.

Straightens Shapes with Greater Accuracy

No. 62

Sutton Engineering Co., Park building, Pittsburgh, has placed on the market a new machine for increased straightening accuracy on hot-rolled, cold-rolled and cold-drawn shapes of both ferrous and nonferrous metals. This machine, shown in the accompanying illustration, straightens by vertical and horizontal pressure in one pass. The manufacturer claims it to be the only machine that permits changing of the position of the top rolls to lengthen or shorten the straightening centers. Because of this feature, both large and small sizes can be straightened on the same machine. The machine handles angles up to ½ x 2 x 2-inch; rails up to 15 pounds; flats up to ½ x 2½-inch; and all other sections of not over the same weight per foot. Types for either motor or belt drive are available. The straightening speed is approximately 250 to 300 feet per minute. The top rolls are provided with lateral adjustment and are keyed to shafts having double bearings.

Machine Radially Rolls Steel Disk Sections

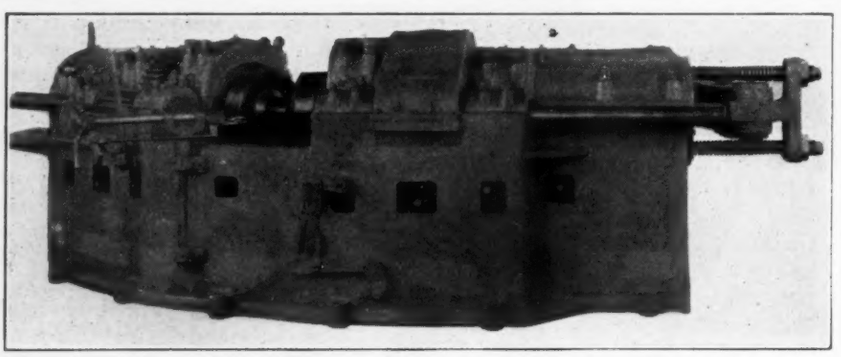
No. 63

The Aetna-Standard Engineering Co., Youngstown, O., has designed a machine for radially rolling steel sections such as the new-type steel differential case used by a leading manufacturer of automobiles. This company, a designer of tube-making equipment, found a relationship between radially rolling and the diagonal rolling common to all piercing machines. The new machine, one of which is shown in the illustration, consists of two separately motor-driven disks, the axes of which are placed angularly. One roll is fixed and carries the work piece, and the roll opposite is pushed onto the work by a motor-driven screw arrangement and withdrawn by compression springs. The blank used is a forging made on an upsetting machine and has the hubs formed to suit the finished disk and the hole pierced for the proper diameter bore. The production rate is about 10 disks per minute. The blanks are heated before rolling. Rolls are designed to give the proper speed relation to prevent distortion on the work piece as it is radially displaced. Each disk is driven by a motor of 150 horsepower direct connected to the pinion shaft. Disk and pinion shaft bearings are mounted in roller bearings.

Makes Welding Electrodes from Mild Steel

No. 64

Fusion Welding Corp., 103rd street and Torrence avenue, Chicago, announces two new mild steel welding electrodes. One is said to be the fastest flowing electrode produced, and has more arc stability than flux coated rod. It is especially suited to the welding of medium and lighter gage plates as well as sheets. It is a full flux coated electrode. The other rod is a surfaced electrode and is designed to give extreme penetration when used with high current on heavy material. It is said that ½-inch mild steel plates have been successfully welded, without beveling the edges, at a rate of over 20 feet per hour.

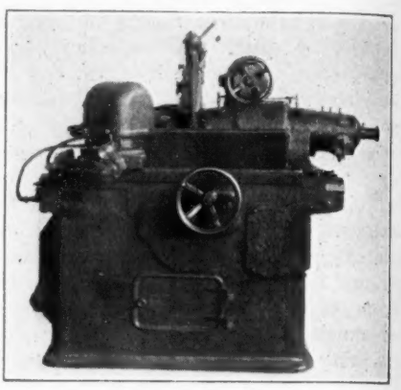


No. 63—Machine for radially rolling steel sections

Valve Face Grinder Has Hydraulic Feed

No. 65

Landis Tool Co., Waynesboro, Pa., has developed a semiautomatic hydraulic valve face grinder for grinding similar parts in large quantities. However, the machine is flexible and may be converted from grinding one type or size of valve to another merely by changing to a suitable work-holding fixture. The grinder is shown in the accompanying illustration. Such units as the bed, wheel base, rear drive, oil pump and water service are the same as on the 6-inch plain hydraulic, but the work carriage, work head and cross slides have been designed special. The live spindle work head is mounted at 45 degrees on a cross slide which moves at right angles to the axis of the grinding wheel spindle. Hydraulic power moves the cross slide toward or from the wheel. A ½-horsepower constant-speed motor mounted on the head itself drives the work spindle through a silent chain and sprocket. Movement of the head automatically regulates the spindle rotation. The work-holding fixture is air operated. The grinding wheel head is massive and is equipped with a 1 x 8 x 24-inch wheel. The machine may be arranged for either lineshaft or direct-motor drive, although in either case a work driving motor is required.



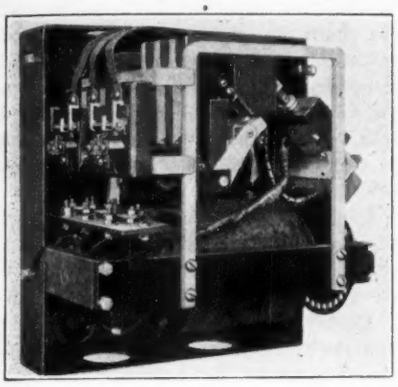
No. 65—Hydraulic valve face grinder

Edison P. Morrow, former governor of Kentucky, is scheduled to be the principal speaker before the twenty-seventh annual dinner of the Traffic club of Pittsburgh, at the William Penn hotel March 8.

Induction Starter Given Adjustable Features

No. 66

Lincoln Electric Co., Cleveland, has placed on the market a new automatic induction starter having two adjustable features. The interior mechanism of the starter is shown in the accompanying illustration. One of the adjustments is in the starting current and starting torque and is made by changing the position of the rotor in the regulator. This rotor is index mounted. The other adjustment is in the current at which the throw-over takes place. The throw-over is controlled by a retarding solenoid which is operated by the motor current. The pull of this solenoid can be adjusted by a simple lock rod arrangement carried on its plunger. To facilitate mounting, the device is made in three parts—the back cover, the front cover and the switch proper. Control of starter is by conventional push buttons. Overload and no-voltage protection features are provided.



No. 66—Adjustable-type motor starter

Axle Lathe Has Oil Gear Feed to Carriage

No. 67

Consolidated Machine Tool Corp. of America, Rochester, N. Y., recently has built two heavy-duty, center-driven axle lathes equipped with oil-gear feed to the carriages. One of the machines is shown in the accompanying illustration. With oil geared feed, feed gearing is eliminated and the carriages are handled entirely by power. Positive feeding pressure is applied to each tool by oil cylinders attached to the under side of each carriage at front and back. This application of feed pressure directly under the tool and held rigidly in balance permits much heavier cuts and feeds. Each carriage is provided with adjustable automatic stops. Control levers for setting the rate of feed and for power traversing the carriages are located at the center of the machine within easy reach. Power traverse is at the rate of 6 feet per minute. And feed from 0 to ½-inch per revolution is available. The main drive is by either adjustable speed motor through a single train of gears, or by constant speed motor through a 3-speed gear box. Ordinary requirements call for a 25-horsepower motor.

Marketing Three New Gas Welding Outfits

No. 68

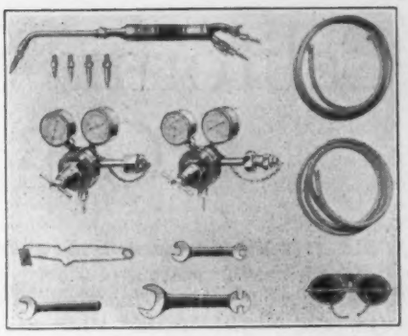
Oxweld Acetylene Co., 30 East Forty-second street, New York, has placed on the market three gas welding outfits to meet the demand of automobile repair shops and sheet metal shops. These outfits are made possible by the addition to the company's line of two small 2-gage regulators and two special blowpipe tips, one for heating and brazing and one for radiator soldering. The outfit shown in the illustration is recommended for auto body and fender work and for welding light and medium castings. It is also suitable for general sheet metal shop work and light production welding. By the addition of a cutting attachment, any of these three outfits may be used for cutting wrought iron or steel.

Obsolete Tools Mark of Plant Inefficiency

(*Concluded from Page* 566)

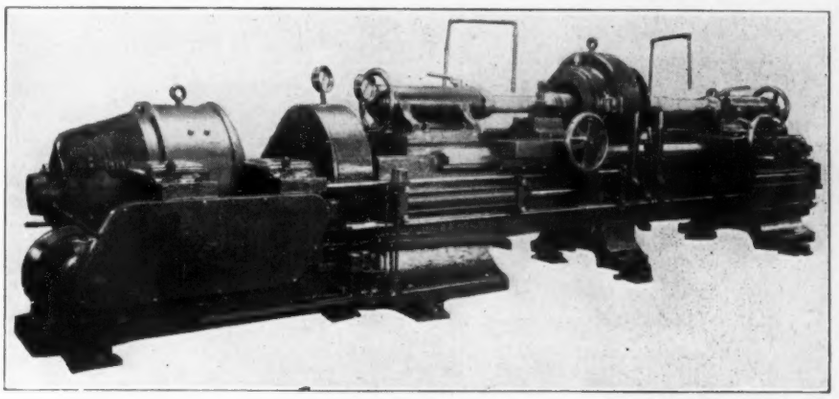
to create a "machine tool consciousness." For several years the machine shop practice session of the American Society of Mechanical Engineers has directed plant managers toward channels of greater efficiency. The American Society for Steel Treating has devoted sessions to machine shop practices and the American Gear Manufacturers' association has impressed its members with the necessity of purchasing and installing modern high production equipment if profits are to be maintained in the face of severe competition. More recently, the machine tool congress, conducted in connection with the National Machine Tool Builders' exposition last September, sought to crystallize attention upon this subject.

For the last three years, the Chicago section of the American Society of Mechanical Engineers has been doing notable work by conducting an annual machine shop practice meeting. This year's meeting is to be held at the Morrison hotel, March 14, with a session in the afternoon and another in the evening. As announced on Page 611 of this issue of IRON TRADE REVIEW, five papers by well-informed authors have been scheduled for presentation. Because of the importance of this meeting, other local societies and organizations have been invited to participate, including the Society of of Automotive Engineers, Society of Western Engineers, Machinery Club of Chicago, Illinois Manufacturers association and Chicago Association of Commerce. Several hundred engineers are expected to attend.



No. 68—Outfit for gas welding

Columbia Steel Corp., Portland, Oreg., has been granted a drawback on manganese steel castings made with imported ferromanganese.



No. 67—Heavy-duty axle lathe with oil gear carriage feed

California Steel Conference Fosters Constructive Program

IMPORTANT features of the fourth annual meeting of the Iron, Steel and Allied Industries of California, in Del Monte, Calif., Feb. 17-18, were the adoption of resolutions to continue aggressively the program outlined in the first conference; addresses by Charles J. Graham, president, Bolt, Nut and Rivet Manufacturers association. Pittsburgh; Charles F. Abbott, executive director, American Institute of Steel Construction, New York, and Ray M. Hudson, assistant director of commercial standards, United States department of commerce. A committee was appointed to investigate the problem of formulating a Western Iron and Steel institute embracing either eleven western states or the three Pacific coast states.

Interest in the constructive program of the conference is increasing. More delegates attended this year than ever before, approximately 200 participating. Included among the visitors were W. G. Clyde, president, Carnegie Steel Co., Pittsburgh; E. O. Shreve, manager industrial department, General Electric Co., Schenectady; Gustav Kahn, vice president, Truscon Steel Co., Youngstown, O., and A. T. De Forest, vice president, United States Steel Products Co., San Francisco.

Group and committee meetings were held Feb. 16, devoted to preliminary discussion of trade practices within the respective groups, the foreign steel situation and general problems affecting the relation of individual groups to the organization.

At a meeting of reinforcing steel jobbers, J. E. Heber, Pacific coast manager, Truscon Steel Co., Los Angeles, was elected president of the California Reinforcing Steel institute. Charles M. Gunn, president, Gunn, Carle & Co., San Francisco, and N. E. Dawson, Soule Steel Co., Los Angeles, were elected vice president and treasurer, respectively. Directors elected for the coming year are W. S. Wetenhall, president, W. S. Wetenhall Co., San Francisco; L. Soule, president, Soule Steel Co.; R. G. Falk, vice president, Badt-Falk Co., Los Angeles and San Francisco, and T. M. Davidson, Badt-Falk Co.

Frederick J. Koster, president, California Barrel Co., San Francisco, and chairman of the executive committee, opened the conference Feb. 17. He emphasized the importance of all groups and committees continuing their work along the lines of standardization and simplification, which he considered the keynote of the conference.

M. A. Beeman, secretary, Concrete Reinforcing Steel institute, Chicago, stressed the importance of co-operative effort. He reviewed the work of the institute and urged that the matter of securing a uniform cost accounting system be given serious consideration. He outlined the profitable results that accrued to members of the institute who installed such a system. He spoke of benefits derived from systematic study of tonnage reports and other statistical data, and urged that full advantage be taken of all mediums for publicity.

Speaking on "Standardization and Its Relation to the Iron and Steel Industry on the Pacific Coast," Ray M. Hudson pointed out that standardization and simplification are powerful fundamental forces in modern business. In reference to foreign importations, he said:

Committees Chosen at California Conference

Harvey Hewitt, chairman, Southern California Iron & Steel Co., Huntington Park.

Steel Mills, Northern California

S. S. Lawrence, chairman, Columbia Steel Corp., San Francisco.
E. S. Houdlette, Pacific Coast Steel Co., San Francisco.

General Manufacturers, Southern California

George J. Kuhrts Jr., chairman, Standard Boiler Steel Works, Los Angeles.
H. Riggs, Baasch-Ross Tool Co., Los Angeles.
W. Wardman, Alloy Steel & Metal Co., Los Angeles.
A. J. Morse, Alloy Steel & Metal Co., Los Angeles.
George Koehler, Federal Tank & Steel Works, Los Angeles.

General Manufacturers, Northern California

H. W. Force, chairman, California Corrugated Culvert Co., Berkeley, Calif.
R. A. Folsom, W. R. Ames Co., San Francisco.
G. A. Bahler, Caterpillar Tractor Co., San Leandro, Calif.
R. M. Alvord, General Electric Co., San Francisco.
H. P. Phillips, Link-Belt, Meese & Gottfried Co., San Francisco.

Merchant Steel Jobbers, Southern California

Shannon Crandall, chairman, California Hardware Co., Los Angeles.
D. P. N. Little, A. M. Castle Co., Los Angeles.
C. A. Ducommun, Ducommun Corp., Los Angeles.
E. Jungquist, Percival Steel & Supply Co., Los Angeles.

Merchant Steel Jobbers, Northern California

F. J. Bruzzone, chairman, Baker, Hamilton & Pacific Co., San Francisco.
Roy L. Sanford, A. M. Castle Co., San Francisco.
C. H. Merrill, Holbrook, Merrill & Stetson, San Francisco.
H. D. Simon, Foucar, Ray & Simon, San Francisco.
F. F. Thomson, Thomson-Diggs Co., Sacramento.

Foundries, Southern California

Martin Madsen, chairman, Madsen Iron Works, Los Angeles.
Carroll A. Stilson, Metal Trades Mfg. association, Los Angeles.

Steel Mills, Southern California

G. A. Axelson, Axelson Machine Works, Los Angeles.
Lloyd D. Kay, Kay-Brunner Steel Casting Co., Los Angeles.
Frank M. Burger, Llewellyn Iron Works, Los Angeles.

Foundries, Northern California

George A. Gunn, chairman, Best Steel Casting Co., San Francisco.
C. M. Henderson, H. C. Macaulay Foundry Co., Berkeley.
C. E. Williams, Columbia Steel Corp., San Francisco.
Dave Guild, Phoenix Iron Works, Oakland.
A. D. Scoville, Pacific Coast Foundrymen's association, San Francisco.

Structural Fabricators, Southern California

E. H. Gohle, chairman, McClintic-Marshall Co., Los Angeles.
Guy C. Boyton, Baker Iron Works, Los Angeles.
R. T. Miller, Union Iron Works, Los Angeles.
G. W. Suarett, Llewellyn Iron Works, Los Angeles.
C. Fred Brombacher, Brombacher Iron Works, Los Angeles.

Structural Fabricators, Northern California

H. Mortenson, chairman, McClintic-Marshall Co. Central Works, San Francisco.
Paul F. Gillespie, Judson-Pacific Co., San Francisco.
S. S. Herrick, Herrick Iron Works, Oakland, Calif.
C. E. Spencer, California Steel Co., Oakland, Calif.
H. Morris, Western Iron Works, San Francisco.

Reinforcing Steel Jobbers, Southern California

J. E. Heber, chairman, Truscon Steel Co., Los Angeles.
N. E. Dawson, Soule Steel Co., Los Angeles.
D. N. Folling, Pacific Coast Steel Co., Los Angeles.
George Parker, Fenton-Parker Material Co., San Diego, Calif.
E. L. Hansen, Blue Diamond Co., Los Angeles.

"The greatest bulwark against invasion of our domestic iron and steel markets by foreign producers is American inventive genius and an abundance of executive capacity for organization.

"The bogey of foreign competition is bound to recede as we mobilize our resources and energies. Simplification, standardization and research are three formidable allies in any industry."

Charles J. Graham, in an address, "Co-operation, the Essential Factor in American Prosperity," said the greatest national problem today is how to correct the condition whereby half the business institutions do business at a loss. While millions of dollars are being spent to lower cost of production, he said, little money is being used to lower the cost of selling and distribution. He stressed the importance of the jobber in economical distribution.

Mr. Graham suggested that the conference adopt a resolution, to be signed by every interest on the Pacific coast, to import nothing that could be purchased here. In referring to the rapid increase in imports he said: "Ways should be found immediately to correct a situation of this character.

"If permitted to continue at the present rate of increase imports eventually will react and do more to break down what you are endeavoring to build up than any other factor or group of factors."

The closing session Feb. 18 was addressed by John B. Leonard, structural engineer, San Francisco, and Frank C. Mortimer, vice president, Citizens National bank, Los Angeles, who spoke respectively on "The New Uniform Building Code and Its Relation to the Iron and Steel Industry of California," and "Steel Points the Way."

Charles F. Abbott gave the closing address and spoke on "Wasted Profits." A liberal abstract of his remarks appeared in last week's issue of IRON TRADE REVIEW.

Officers Are Elected

Saturday morning officers for the coming year were elected. Frederick J. Koster, president, California Barrel Co., San Francisco, was unanimously re-elected chairman of the executive committee. Walter Taylor, vice president, Llewellyn Iron Works, Los Angeles and E. L. Soule were elected vice chairman for the southern and northern California districts respectively.

As outlined by the conference the objections sought are:

1. *Centralized leadership.* The development of a greater centralized leadership in the iron and steel industry by a more energetic continuation of the co-ordination work of the iron, steel and allied industries of California, through the annual Del Monte conference and the continuation work of the groups throughout the year.

2. *Standard specifications and practices.* Co-ordination of technical groups of architects, contractors and engineers on connection with standard specifications affecting the iron and steel industry of California.

3. *Uniform building code.* The active co-operation of the iron and steel industry in the adoption of a uniform building code and its general acceptance and application by the municipalities of California.

4. *Support of California payrolls.* Continuation on a more energetic basis of the work of the iron, steel and allied industries of California to develop a statewide attitude of appreciation of the value of industrial pay rolls in California, for the purpose of reducing foreign importations to the minimum where such importations seriously interfere with proper development of iron and steel industries in California.

5. *Extension of marketing territory in western states.* Continuation of the traffic program in obtaining rate adjustments that will make it possible for California industries to serve new territories in the western states that are logically a part of the trade area for California industries.

6. *Publicity.* Conduct an active program of publicity through the press and trade magazines of the state to expand existing industries and encourage new pay rolls in the iron and steel industry of California with due regard and protection for existing industries.

7. *Western states iron and steel institute.* That a special committee of three be appointed by the executive committee to investigate the problem of formulating a western states iron and steel institute to comprise the eleven western states; further, that this committee be requested to attend the Northwestern Iron and Steel conference at Tacoma, Wash., Feb. 27, 1928, and submit a report at the next meeting of the executive committee.

The American Association of Engineers will conduct its fourteenth annual convention in El Paso, Tex., June 4-6, with headquarters at Hotel Hussman. M. E. McIver, 63 West Adams street, Chicago, is secretary of the association.

Glorifying British Steel

STEELMAKERS of Great Britain, like those of the United States, are beginning to realize the desirability of making the general public "steel conscious." The accompanying illustration, showing the prominently displayed sign "British Steel Only" and the stencilled "British Steel" on the girder, is reproduced from a photograph taken recently during construction of a new building on the Strand in London. British steelmakers, operating under free trade conditions, are faced with the additional problem of marketing their product in the face of considerable competition from other European countries. This sign calls attention to the fact that British steel rolled in a well-known British steelworks and fabricated by British workmen is being employed.

Large Uses of Steel in Small Ways

STEEL, as a fundamental material, the basis for all industrial activity, enters into the construction of many products of peculiar application. One such, is the glass enameled reaction kettle that finds wide use in the chemical and affiliated industries.

Although cast iron is used frequently in the production of reaction kettles, steel plates and sheets also enter extensively into such fabrication. Reaction kettles are made in a wide range of sizes, one manufacturer producing them from 2 to 300 gallons capacity in 44 standard models and numerous combinations.

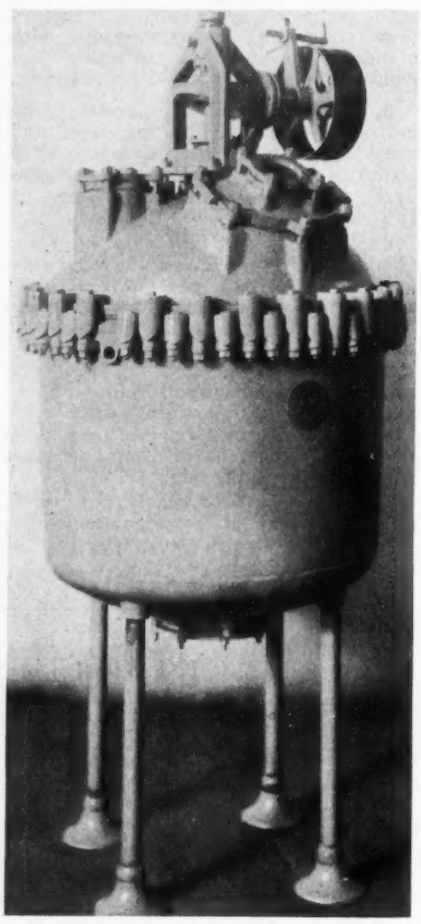
Requirements for steel in the manufacture of reaction kettles call for steel plate of $\frac{3}{16}$ to $\frac{5}{8}$-inch thickness and length varying with the size of kettle to be produced. Steel plates used in this manner are specified open-hearth flange steel. It is estimated that between 3000 and 4000 tons of plates are consumed annually in the manufacture of reaction kettles. For the outside covering of some of these kettles 18 to 20 gage copper bearing galvanized sheet steel is used, the quantity approximating 5000 to 6000 tons annually.

In the fabrication of reaction kettles from steel plates, the plate selected first is placed upon a templet table and cut to the desired size. It then is passed through a set of rolls which forms it in the desired shape. The seam or joint of the edges then is welded, forming a tapered cylindrical shell. To this is fitted the concave bottom, which also is welded into place.

After thorough inspection of the interior and any cleaning and grinding that is necessary to remove uneven welds or scale, a coat of powdered enamel is brushed onto the inner surface of the shell. The entire kettle then is placed in a furnace where the enamel is baked in the first coating. The kettle is removed from the furnace and another coating of enamel placed on the interior. This then is baked in the same manner as the first coat. The number of coats varies with the nature of the enamel as well as the type of service in which the equipment will be used.

Following the enameling of the interior, the head is likewise treated and assembly starts. Cast iron or

Reaction Kettles



Many reaction kettles have cast iron exteriors and detachable glass lined steel interiors

pressed steel legs are fitted into the bottom of the kettle and clamps and agitator or other connections are fitted to the top. Following the assembly, the exterior is painted.

Steel plate frequently is used as liners for cast iron shells. The plate is glass coated and so assembled into the reaction kettle that it may easily be detachable.

THIS is the one-hundred tenth of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the American tonnage.

Among articles appearing every two weeks and not included in Vol. I containing 51 separate descriptions are:

Vacuum Bottles	*Suspenders*
Highway Guards	*Screw Hooks*
Numbering Machines	*Steel Bridging*
Joist Hangers	*Mail Boxes*
Straight Razors	*Steel Shelving*
Piano Wire	*Automobile Bumpers*
Type Molds	*Tire Chains*
Swords	*Bathroom Fixtures*
Paving Guards	*Snow Fences*

Mirrors of Motordom

(*Concluded from Page* 563)

duction closely to the volume of sales.

Chevrolet continues the pacemaker, having aimed at 120,000 units in February and 140,000 in March. Chevrolet, like Whippet, which is reputed to be 25,000 orders behind, is endeavoring to get maximum distribution while Ford is getting under way. Ford is reputed to be assembling 1000 to 1400 cars daily, considering all branches. Within 30 days a 2000 daily rate is expected to be attained. Rumors that Ford is working on an intermediate price model appear unfounded.

Hudson-Essex is going so strong it is unable to compress all of its sheet clippings. Dodge has made no appreciable gains the past week. Graham-Paige, whom some look to prove a second Chrysler, is heading for 350 cars daily of its small model and 250 of the large. Buick holds at 800 to 900 units daily, but nears the end of its run on 1928 models. Hupp continues at capacity. Reo and Chrysler have made no gains. Cadillac, Packard, Lincoln and LaSalle are going strong.

* * *

FEW scrap grades anywhere are so sought as automobile cast or rejected cylinder blocks, because their use is almost insurance that exacting automotive specifications will be met. Foundry iron can be had for no more than $18, Detroit furnace, but heavy automobile cast brings $20 to $21 (net) and for rejected blocks a foundry near Detroit is offering $23.50.

Officers elected by the Chicago Foundrymen's club for the ensuing year are as follows: President, David G. Anderson, chief foundry engineer, Western Electric Co., Chicago; vice president, Roy Frazier, superintendent of Hansell-Elcock Co., Chicago; and secretary-treasurer, Albert N. Wallin, S. Obermayer Co., Chicago, re-elected.

Editorials

Gray Iron Founders Facing Test
London Gloom Bears Metal Prices
Scrap Becomes Less Speculative
Industry an Aid, Not Drag, to Farm

An Event—or Just Another Meeting?

FORTUNATELY for the gray iron foundry industry the sentiment favoring the formation of a national gray iron association rapidly is crystallizing into action. On March 13 a meeting will be held in Pittsburgh to discuss this important problem. It is the culminating event of a movement that has been under way for nearly two years.

The task confronting those who would launch an association of gray iron casting shops is not a simple one. The plan of organization must provide the necessary machinery for carrying out the desired objectives and yet must recognize the functions of organizations already in the field which for many years have served the gray iron foundries in certain capacities.

The activities of the proposed organization are clearly defined by the present difficulties in the gray iron industry. The inroads on gray iron casting markets by competing products, the unbusiness like methods pursued by many of the casting shops and the general lack of appreciation in the industry of the latent possibilities in gray iron as an important engineering material, point conclusively to the need of group action to correct these evils. Therefore the objectives of this co-operative work should be as follows:

1. Research work to discover and develop the possibilities of gray iron to the end that they may be exploited.

2. Market research and exploitation of the results of research work so that the superior qualities of gray iron castings be known to potential users.

3. Education of foundrymen in the fundamentals of the business with a view of eliminating present ignorance regarding costs and other details.

4. Promotion of better relations between the foundry and customer to the end that terms of sale, contracts and other similar items may be standardized and thoroughly understood by all concerned.

Unless the new body is prepared, by adequate financial and moral support, to carry out the most important of these objectives, it would be better to drop the plans of organization at once. Experience has proved that under proper leadership and with reasonable support a trade organization of the type contemplated is worth many times its actual cost. On the other hand the graveyard of defunct trade organizations is full of the remains of associations whose members did not support them courageously.

The Pittsburgh meeting may easily prove to be a significant date in the history of the gray iron foundry industry. On the other hand it may prove to be just "another meeting." The decision as to which it will be lies wholly in the ability of the gray iron foundrymen to think constructively and act liberally.

Mergers Limit Trading in Scrap

MERITORIOUS as the recent mergers among producers of steel may seem from possible economies in management, for dealers in iron and steel scrap they have added a worry. Each merger has eliminated at least one outlet for scrap and further concentrated buying. Those dealers who have nurtured connections with the purchasing departments that have failed to survive the amalgamation processes are unfortunate. It may also prove the case that when two consumers of scrap are united they will be well nigh self-contained and in less need of the trade's services. But what is more important, as buying is passing to fewer hands the opportunities for wide swings in prices are narrowed and the scrap trade is deprived of the major source of its profits. Indeed, scrap promises to become a settled industry instead of a "game."

Must Resume Nonferrous Buying

WAIT and see" is the attitude characterizing the nonferrous metal markets. Prices of these metals are easy, and in a few instances weak, at a time when iron and steel display the greatest strength in a year. Buyers'

waiting tactics are both effect and cause of the present slump, especially in zinc, copper and lead.

Last autumn the nonferrous metals began turning the corner, before iron and steel stirred. Lead and copper had the additional support of good export demand. Users of nonferrous metals covered through January and to some extent through February. Iron and steel have experienced in January and February a market similar to that of November and December in the nonferrous field.

Expected February activity has not materialized. Old purchases have lasted longer than expected. Domestic prices, especially on lead and tin and to an extent on copper and zinc, have been forced down by declines abroad. Weakness in Europe is due partially to oversupply, but there is a reflection of the broadening impression, particularly in London, that American prosperity has passed its peak. Although the stock market has less effect than formerly on the nonferrous metals, the reaction in security prices is not without some consequence.

This doubtful state of affairs in the nonferrous metals cannot long continue. February has passed into history, it is being found that consumption has exceeded the day-to-day indications and in many lines spring business compels higher operating rates. Consumers may commit themselves cautiously, but they cannot remain wholly aloof.

Farm Problem Not Efficiency

WHATEVER the cause of agriculture's present difficulties they cannot be attributed to lack of increased production efficiency. Industry and inventive genius have contributed as much to the farm as to the factory in the last quarter century. Figures gathered by the National Industrial Conference Board indicate that industry and agriculture have advanced with practically even steps in mechanization and productivity. Yet industry has profited largely while agriculture has been in difficulties much of that period. Other causes than lack of progress must be sought to explain this difference in practical results.

Output per worker in industry in the period 1899-1925 increased 49 per cent, in agriculture 47 per cent. Total horsepower used on farms has increased from 23,500,000 to 47,000,000 in the same period, and horsepower per farm worker from 2.2 to 4.5. In industry horsepower per worker increased from 1.9 to 3.6.

Nor can the cause be sought in the character of farm equipment. The world buys American farm implements in competition with all other countries, as the most efficient obtainable, unless natural conditions make them inapplicable or cheap labor bars use of machinery.

American farmers are more productive than those of any other country. One worker, in the five years preceding the war, cultivated 24.4 acres; in Scotland 16.6 acres, England 9.5 acres, France 8.3 acres, Germany 6.2 acres, and in Italy 4.2 acres. Investment in farm machinery per worker in 1920 was $176 for each worker, compared with $36 in 1870, in dollars of equal value.

Thus, while industry has been profiting by increased use of power, it has been aiding agriculture by providing larger and more efficient machinery. Yet the latter has not profited to the same degree.

What Our Readers Are Thinking

Control of Measuring Devices at Stake

To the Editor:

A BILL (H. R. 7208) to empower the bureau of standards to approve or disapprove all weighing and measuring devices or mechanisms used in the country is in the hands of the house committee on coinage, weights and measures. The bill apparently is being put forward by scale manufacturers and by local weights and measures officials, and perhaps is intended to apply to weighing scales and similar apparatus.

There is nothing in the bill which excludes mechanics' rules, micrometers, gages, boiler pressure or blood pressure gages, radio battery testers, automobile speedometers, gasoline gages, tailors' measures, electric meters, gas meters, water meters, taximeters, pedometers, exposure meters, protractors, ship sounding apparatus, calorimeters, pyrometers, hydrometers, hygrometers, and wave meters, or in fact which specifically excludes anything at all.

For that reason the American Institute of Weights and Measures, 115 Broadway, New York, an independent organization having a wide membership of manufacturers and distributors, recommends that everyone using any nature of measuring device take steps to inform himself regarding the provisions of this bill, and seek information from Washington, as to the time and place of hearings.

No one disputes the ambitions of the officials of the bureau of standards to prevent fraudulent application of the weights and measures standards in universal use throughout the country, but everyone is interested in what the bureau has in mind is seeking authority to police every conceivable kind of device we use for producing articles dimensioned in terms of the standards of weight and measure.

WILLIAM E. BULLOCK, *Secretary,*
American Institute of Weights and Measures.
115 *Broadway, New York,*
Feb. 16, 1928.

IRON TRADE REVIEW

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E. L. SHANER, Editor. *J. D. PEASE, Advertising Director.* *F. F. LIGHT, Circulation Manager.*

British Fabricators Making Public "Steel Conscious." Page 571.

THE broad meaning of the conference of Iron, Steel and Allied Industries of California, which gives it importance as reported on page 570, is the furtherance of a policy of co-operation. Producers, jobbers and fabricators are awake to the opportunities for constructive work; they are firm for such a policy and they are setting an example, not only in western territory, but for the entire industry. A matter of further interest is their appointment of a committee to study the question of organizing a Western Iron and Steel institute.

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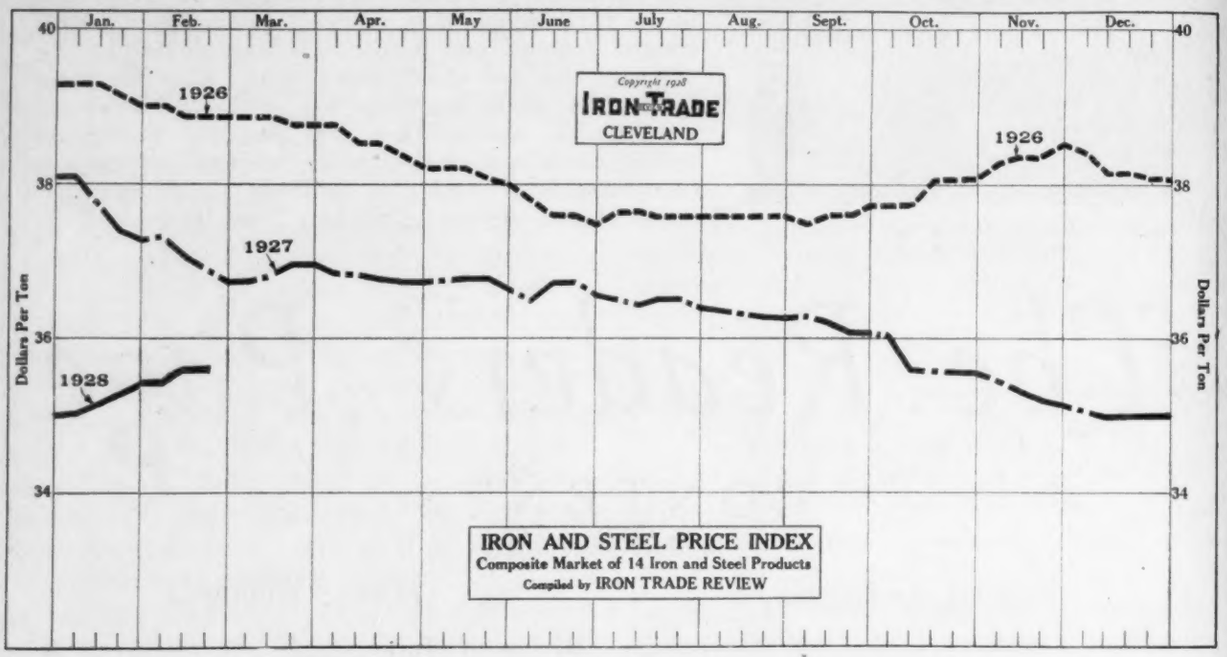
The Business Trend



Price Level Displays Stability

By JOHN W. HILL, Financial Editor

PRICES in the iron and steel trade during the first two months of 1928 have reversed their course for corresponding periods of the two preceding years. The trend since the start of the year has been upward and there have been marked and convincing evidences of underlying strength in the market. In the early week of 1926 and 1927 the opposite was shown to be true.

IN 1926 iron and steel prices, as measured by IRON TRADE REVIEW'S composite market average of 14 iron and steel products, turned weak in the middle of January. There was a gradual decline until early April, when the recession became more pronounced. Prices stabilized in the summer of that year, and strengthened in the autumn, though the condition was not for long.

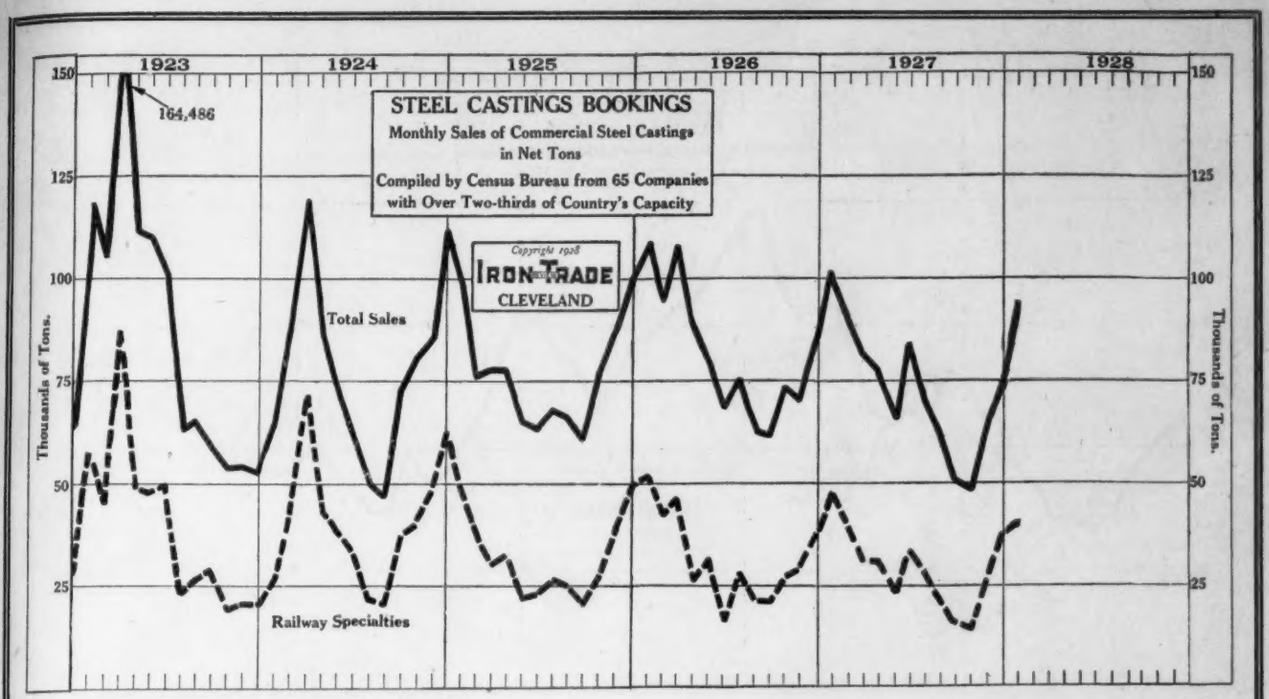
DECEMBER, 1926, witnessed further weakness and this was the inheritance of January, 1927. The market broke sharply in that month and continued to fall until March. From that time there was a dragging movement of prices with a declining tendency, which became more pronounced in October. Stability began to appear in December and the advance carried through into 1928.

ALTHOUGH prices now are showing signs of strength, their level is at the lowest ebb of any corresponding period since 1922, and with that single exception it is the lowest since 1916. IRON TRADE REVIEW'S composite is now 10 per cent lower than it was two years ago and about 5 per cent lower than it was one year ago.

THE question of chief interest in the steel trade just now, of course, revolves about the tenability of the current quotations. Present indications are that the higher levels not only will hold but that there may be some further moderate advances. It is unlikely that violent increases will take place, but forces and influences are at work in the industry looking toward more profitable returns for producers.

PRICES have gone down to unprofitable levels in the steel trade because of excessive producing capacity, together with an over-straining for volumes at any cost and, consequently, keen competition among sellers. This condition was aggravated last year by the reduced demand for steel. More normal demand in 1928, combined with the broader vision actuating the steel industry, as manifested in the merger movement, should combine to give a better foundation to the structure of steel prices.

The Business Trend

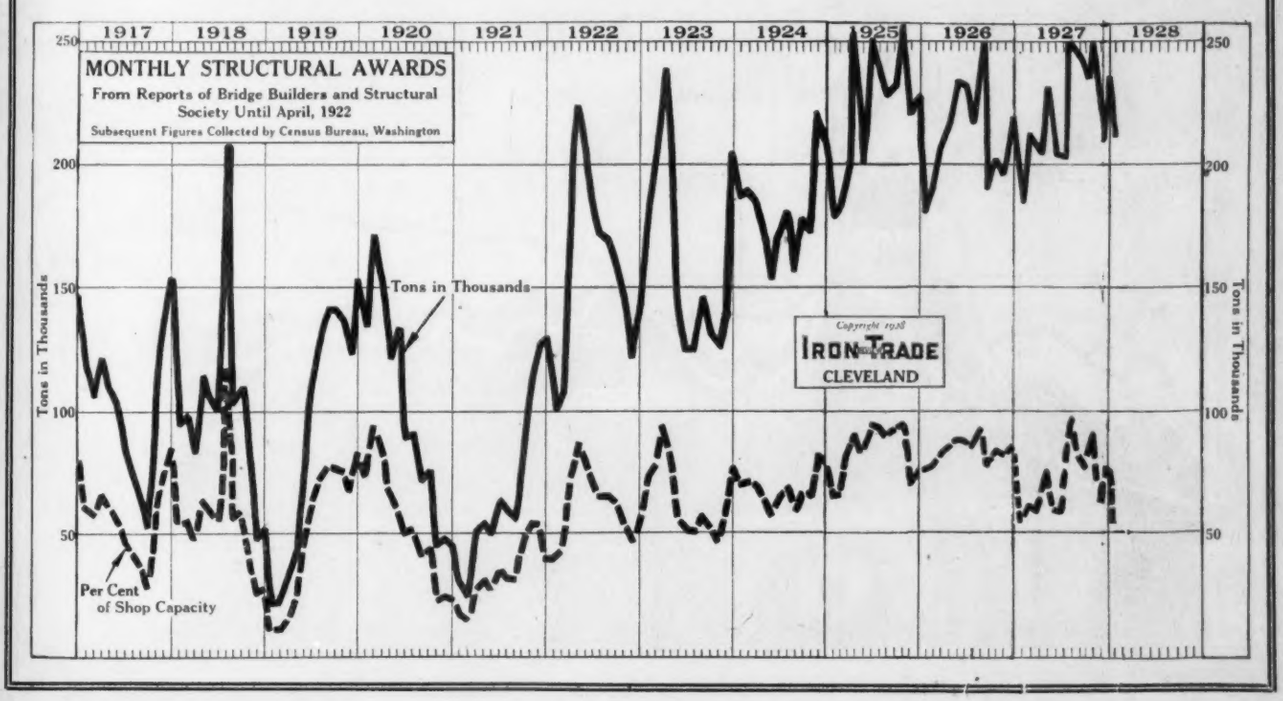


Steel Castings

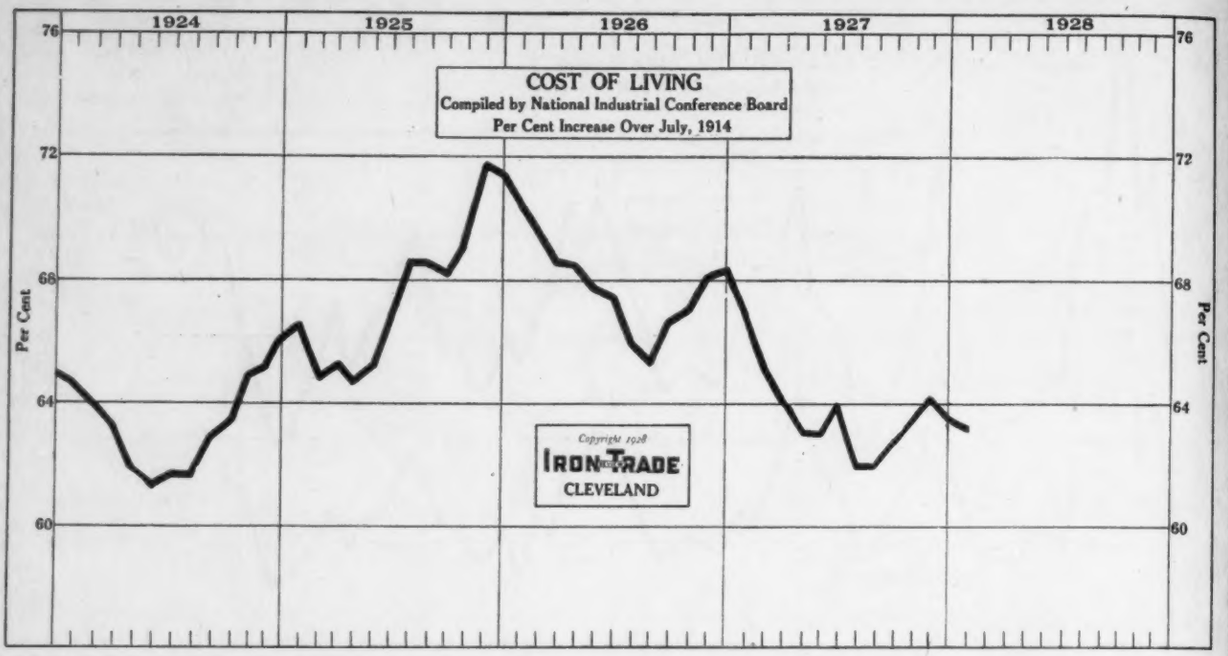
JANUARY brought a sharp gain in the record of bookings of steel castings. The total of new orders for the month amounted to 90,863 tons compared with 76,953 tons in December and 107,779 tons in January, 1927. Railway bookings totaled 41,276 tons compared with 39,112 tons in December and 53,461 tons in January, 1927. Miscellaneous orders showed the largest increase to a total of 49,587 tons compared with 37,841 tons in December. Total bookings were 16 per cent below January, 1927.

Structural Awards

BOOKINGS of structural steel in January for the country are computed at 213,750 tons, a decline from the 238,500 tons reported for December. However, a sharp gain is shown compared with the total of 171,720 tons reported for January, 1927. Shipments during the month were 210,000 against 174,900 tons in January, 1927. The per cent of capacity represented by the actual tonnage of bookings in January was 57 compared with 75 in December and 54 in January, 1927.



The Business Trend

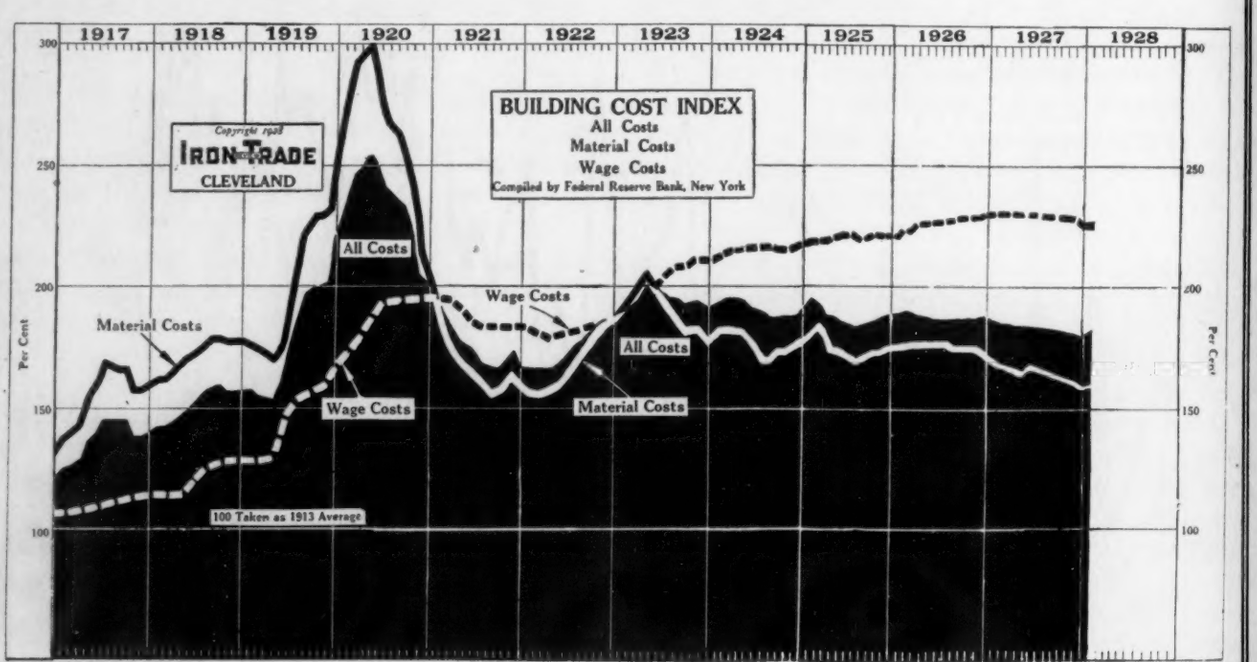


Cost of Living

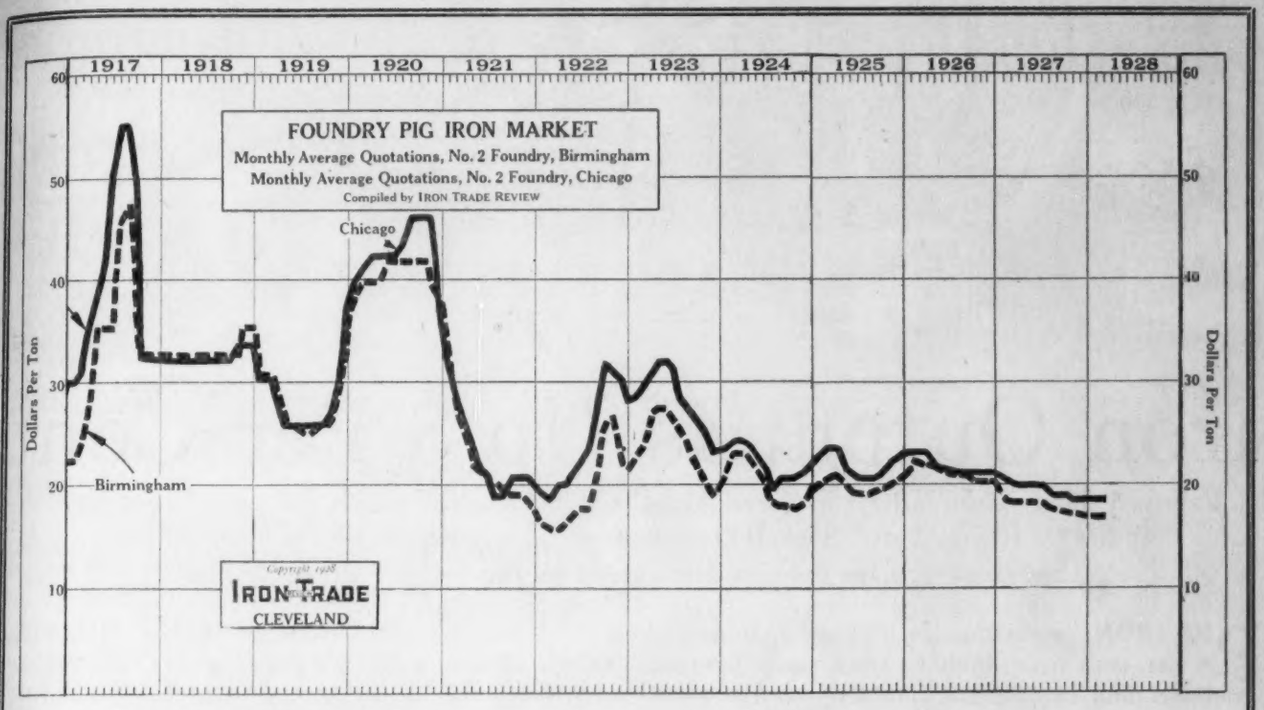
LIVING costs, as measured by retail prices of general commodities, and the cost of shelter, have been declining irregularly since late in 1925. At that time the index, compiled by the National Industrial Conference board, reached its peak for recent years at nearly 72 per cent over the average for July, 1914. There was a rise in the last part of 1926 followed by a sharp decline through most of 1927. After some recovery the index declined again and in January it stood at 63 per cent over the 1914 level.

Building Costs

BUILDING costs have been slowly declining since 1923. The index of building costs compiled by the federal reserve bank at New York now stands at 86 per cent over the prewar level compared with the 1923 peak of 100 per cent over 1913. Declines in the prices of building materials have been partly offset by rising wages. In 1923 both wages and materials were 100 per cent over 1913. Materials are now 57 per cent over the pre-war level while the wage index stands at 129 per cent over 1913.



The Business Trend

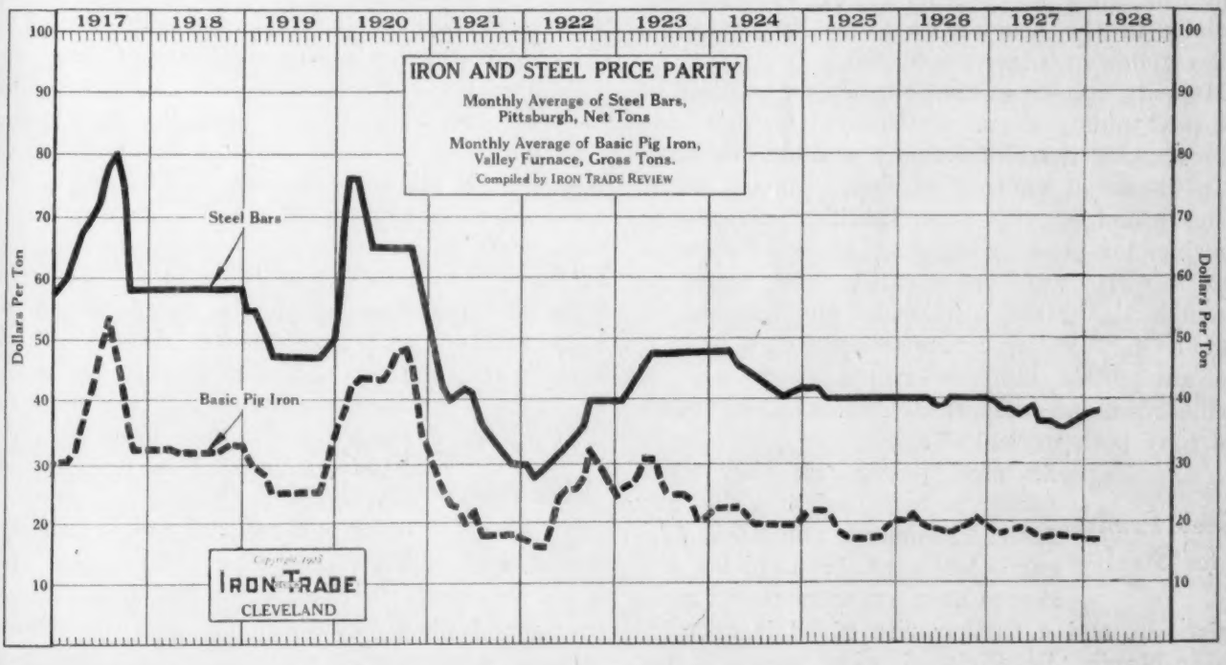


Foundry Pig Iron

FOUNDRY iron prices both north and south, have continued to cling to their low level. No. 2 foundry, Chicago, at $18.50 a ton in February is unchanged since last November. This figure compares with $22.25 a ton one year ago. Southern No. 2 Birmingham at $16 a ton is unchanged from the preceding month but 50c a ton lower than it was in November, 1927. It is also $2 a ton lower than the $18 a ton quoted in February, 1927. At present shipments of iron against contracts are heavy but inquiries and sales few.

Steel Price Parity

IMPROVEMENT in the iron and steel price situation has been chiefly confined to finished materials and so far there has been little reflection of it in the pig iron market. As a result the spread between steel bars and basic valley pig iron has been widening. In January steel bars averaged $36 a ton and basic valley pig iron averaged $17 a ton. In February the average for steel bars at Pittsburgh was $37 while basic valley continued to hold at $17, therefore increasing the spread by $1.



Iron Output Is Up 8 Per Cent

February Daily Rate is Best in Seven Months While Total Exceeds January—Steel Continues on Rising Tide—Second Quarter Contracting Starting—Pig Iron Selling Less Brisk—Shape Inquiry Heavy—Coke Inactive—Ford Seeks Ore

PIG IRON production in February increased 8 per cent over January on a daily average basis and despite the handicap of the short month exceeded the January total. At an estimated 99,471 tons the February daily rate compares with 92,113 tons in January and 105,021 tons last February. The total for February is estimated at 2,884,674 tons, against 2,855,515 tons in January and 2,940,604 tons in February, 1927. Steelworks stacks registered a net gain of six active in February while merchant stacks lost four, making 186 stacks active as of Feb. 29.

Steel enters March, the last lap of the first quarter, with prices still on a rising tide, consumption broadening moderately and production little changed at slightly over 85 per cent. Shipments have been maintained in the past week, reflecting good specifications, but bookings, especially in the heavier lines, are in the usual valley following a price advance.

Majority opinion in the industry is confident of the next ninety days. February bookings have approximated those of January without the benefit of seasonal railroad buying. March should derive added impetus from specifications against expiring, low-priced contracts. It would occasion little surprise were the month's steel output to threaten last March's record. By the end of May, as far forward as steelmakers care to look, the automotive industry will have passed its spring crest and most 1928 track material orders will have been worked off.

Seek Profit for Steel

As steel prices rise they draw nearer a test period. The new 1.90c, Pittsburgh, and 2.00c, Chicago, levels on bars, plates and shapes have not encountered much resistance, and a further rise of $2 is expected late in March. Semifinished prices are up $1 per ton at Chicago and stronger in the Mahoning valley. Sheet mills are booking for the second quarter at the higher prices. Automotive buyers are bearing down on higher strip quotations. The industry generally is striving to get on a remunerative basis before the summer letdown.

Primary Rail Buying Over

Distribution of 50,000 tons of rails by the Rock Island railroad among Chicago mills swelled the week's rail business to 75,000 tons and closed the primary buying movement for 1928. The tonnage was virtually a repetition of 1927. Track fastenings continue active, nearly 18,000 tons being closed at Chicago and 10,000 tons being on inquiry. With the Pacific Fruit Express placing 2000 refrigerator cars, February car orders approached 10,000, compared with 3900 in January. The two-month total for 1928 is 14,000 cars; for 1927 it was 20,670. The St. Paul railroad will buy 4660 freight cars.

Automotive requirements keep a heavy tonnage of steel bars moving from Pittsburgh and Chicago mills. Freight car and building industries sustain the plate market at Chicago in the absence of oil country demand. Pending structural work in all districts overshadows awards; at New York 100,000 tons is up in five projects, while at Chicago an equal total nears placement. Cold finished bars, now being specified more heavily, may reflect the rise in the hot bar price.

Iron Selling Less Active

Second quarter pig iron sales in most districts have been fair, but have not fulfilled the promise of last week. At Chicago further quiet placement at $18.50 has continued, and at Cleveland, where the accent still is on shipments to automotive foundries, 32,500 tons was booked. Southern furnaces are selling into the next quarter at $16. Buffalo has been

The Market Section

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 29, 1928	Jan. 1928	Nov. 1927	Feb. 1927
PIG IRON				
Bessemer, del. Pittsburgh	$19.26	19.26	19.76	20.76
Basic, valley	17.00	17.00	17.00	17.85
Basic, eastern, del. eastern Pa.	19.50	19.50	19.50	21.00
*No. 2 foundry, del Pittsburgh	19.01	19.01	19.26	19.81
No. 2 foundry, Chicago	18.50	18.50	18.50	20.25
*Southern No. 2 Birmingham	16.00	16.00	16.50	18.00
*Southern Ohio, No. 2 Ironton	19.00	19.00	19.00	20.00
**No. 2X, Virginia furnace	20.50	20.50	21.25	22.00
**No. 2X, eastern, del. Phila.	21.26	20.51	20.51	22.26
Malleable, valley	17.25	17.25	17.50	18.10
Malleable, Chicago	18.50	18.50	18.50	20.25
Lake Superior charcoal, del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.51	18.51	18.76	19.31
Ferromanganese, del. Pittsburgh	104.79	104.79	94.79	104.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.60	2.70	2.80	3.35
Connellsville, foundry, ovens	3.75	3.75	3.75	3.85
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	34.00	34.00	34.00	36.00
Sheet bars, open-hearth, Pittsburgh	34.00	34.00	34.00	35.00
Billets, open-hearth, Pittsburgh	33.00	33.00	33.00	34.00
Wire rods, Pittsburgh	44.00	41.50	41.00	43.50
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.80	1.75	1.90
Steel bars, Chicago	1.95	1.90	1.85	2.00
Steel bars, Philadelphia	2.17	2.12	2.07	2.22
Iron bars, Philadelphia	2.12	2.12	2.07	2.22
Iron bars, Chicago	2.00	1.90	1.85	2.00
Shapes, Pittsburgh	1.90	1.80	1.75	1.90
Shapes, Philadelphia	2.07	2.08	2.07	2.12
Shapes, Chicago	1.95	1.90	1.85	2.00
Tank plates, Pittsburgh	1.90	1.80	1.75	1.85
Tank plates, Philadelphia	2.10	2.05	2.07	2.22
Tank plates, Chicago	1.95	1.90	1.85	2.00
Sheets, black, No. 24, Pittsburgh	2.90	2.80	2.80	2.90
Sheets, blue anl., No. 10, Pittsburgh	2.10	2.10	2.10	2.20
Sheets, gal., No. 24, Pittsburgh	3.75	3.65	3.70	3.70
Sheets, black, No. 24, Chicago	3.05	3.05	3.00	3.00
Sheets, blue anl., No. 10, Chicago	2.25	2.25	2.30	2.35
Sheets, galvanized, No. 24, Chicago	3.90	3.90	3.85	3.85
Plain wire, Pittsburgh	2.50	2.40	2.40	2.45
Wire nails, Pittsburgh	2.65	2.50	2.50	2.60
Tin plate, per base box, Pittsburgh	5.25	5.25	5.30	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	15.00	15.35	14.20	16.10
Heavy melting steel, eastern Pa.	14.00	14.00	14.00	15.00
Heavy melting steel, Chicago	12.75	12.25	11.50	13.10
No. 1 wrought, eastern Pa.	15.25	15.25	15.75	17.00
No. 1 wrought, Chicago	12.60	12.65	11.25	13.95
Rails for rolling, Chicago	15.00	15.00	13.95	16.00

Composite Market Average

The Fourteen Leading Iron and Steel Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (February 29, 1928)	**$35.83**
Last week (February 22, 1928)	**35.61**
One month ago (January, 1928)	**35.27**
Three months ago (November, 1927)	**35.35**
One year ago (February, 1927)	**36.97**
Ten Years ago, (February, 1918)	**56.67**
Fifteen years ago (February, 1913)	**28.05**

active, with 10,000 tons sold and 15,000 tons on inquiry.

The beehive furnace coke market drags, as second quarter interest has not yet developed. A Philadelphia district user has contracted for two to four cars daily during March at $2.60 and $2.65.

Few automotive interests have acted on their second quarter sheet needs, but a number of other users have contracted at 2.10c, Pittsburgh, for blue annealed, 2.90c for black, 3.75c for galvanized and 4.15c for full-finished. Specifications are sufficient to keep Pittsburgh and Chicago mills at 80 to 85 per cent. Strip specifications have exceeded the January total and some Mahoning valley mills are scheduled at capacity for several weeks. In the tubular goods market conduit demand leads as spring building approaches. Fresh buying of wire products lags, but contracts at lower prices are ending.

As for several years, the Ford Motor Co. is first in the Lake Superior iron ore market. For 1928 it seeks 400,000 tons in addition to its own production, or almost 100,000 tons more than it purchased in 1927. Final action on this inquiry, which would largely determine the 1928 ore price, is not expected immediately.

Upward adjustments, chiefly in heavy steel, have advanced the IRON TRADE REVIEW composite of fourteen leading iron and steel products 22 cents this week, to $35.83, the highest point this barometer has touched since October.

Late News Flashes

Corporation Subsidiaries Hold at 90 Per Cent

New York, Feb. 28.—Operations of United States Steel Corp. subsidiaries are unchanged at 90 per cent.

Chicago Pegged at 93 Per Cent

Chicago, Feb. 28.—Steel mill operations here continue at about 93 per cent, the same as the past four weeks. Twenty-nine of the 36 steelworks furnaces are active. Bar, shape and rail mill operations are about 90 per cent.

Production at Pittsburgh Tapers Slightly

Pittsburgh, Feb. 28.—Steelmaking in the Pittsburgh area has declined slightly, since the average now is 75 to 80 per cent. Carnegie Steel Co. continues to operate 80 to 85 per cent, and one or two of the independents are on a similar basis. A few others are down a trifle.

Repairs Hamper Steelmaking at Buffalo

Buffalo, Feb. 28.—Open hearth steel operations in this district have dropped to slightly more than 75 per cent, due partially to necessary repairs on some units, but will return to about 80 per cent early in March. Rail, structural, sheet and rod mills are being operated double turn in some steelworks, with most other units on single turn.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	38.30 to 39.30
Chicago	34.00
Forging, Pittsburgh	39.00
Forging, Philadelphia	43.30

SHEET BARS

Pittsburgh, Youngstown	$34.00
Cleveland	33.00
Chicago	35.00

SLABS

Pitts., Young., and Cleve.	$33.00

WIRE RODS

Pittsburgh, Cleveland	$44.00
Chicago	45.00

SKELP

All grades, Pittsburgh	1.85c to 1.90c

Standard Structural Shapes

Pittsburgh	1.90c
Philadelphia, del.	2.07c to 2.18c
New York, del	2.14c to 2.19c
Chicago	1.95c to 2.00c
Cleveland, del.	2.09c
Buffalo	2.00c
Bethlehem	2.05c
Birmingham	2.00c to 2.05c
Pacific coast, c.i.f.	**2.35c**

Steel Plates

Pittsburgh	1.90c
Philadelphia, del.	2.10c to 2.15c
New York, del.	2.175c to 2.225c
Chicago	1.95c to 2.00c
Cleveland	2.09c
Buffalo	2.00c
Coatesville, Sparrows Point..	2.05c
Birmingham	2.00c to 2.05c
Pacific coast, c.i.f.	2.25c to 2.30c

Iron and Steel Bars

Pittsburgh, soft steel	1.90c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality..	2.15c
Philadelphia, soft steel	2.17c to 2.22c
New York, soft steel	2.19c to 2.24c
Chicago, soft steel	1.95c to 2.00c
Cleveland, soft steel, mill	1.90c
Cleveland, soft steel, del.	1.92½c and 2.09c
Birmingham, soft steel	2.00c to 2.05c
Buffalo	2.00c
San Francisco, soft steel	2.35c
Pittsburgh, refined iron	2.75c to 4.25c
Chicago, reinforcing billets	2.30c to 2.75c
Chicago, reinforc. rail steel	1.85c to 1.95c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	1.80c to 1.85c
Rail steel, mill	1.65c to 1.75c
Philadelphia, common iron	2.07c to 2.22c
New York, common iron	2.09c to 2.24c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hot strip, under 3-inch, Pitts.	2.20c to 2.40c
Hot strip, 3 to 6-inch, Pitts.	2.10c to 2.20c
Hot strip, 6 to 12-inch, Pitts.	1.90c to 2.00c
Hot rolled strip, 12 to 24-inch, 16 gage and heavier, coils or cut lengths, 1.90c plate basis, or 2.10c blue annealed basis, plate or sheet extras.	
Hot strip, under 3-in., Chi.	2.30c to 2.50c
Hot strip, 3 to 6-in., Chi.	2.20c to 2.30c
Hot strip, 6 to 12-in., Chi.	2.00c to 2.10c
Hot strip, 12 to 24-in., Chi.	1.95c plate base
Cold rolled strip, hard coils, 1½ inches and wider by 0.100-inch and heavier base, Pitts., Cleve., (under 3 tons)	3.15c
Worcester, Mass	3.40c

Cold Finished Steel

Cold finished steel bars, drawn or rolled, Pitts., Chi., c.l.	2.30c
Shafting (turned, polished) Pitts	2.30c
Shafting (turned, ground) mill (Depending on size, 1⅞ to 7-inch)	2.45c to 2.90c
Cold finished steel bars, Cleve.	2.30c

Chain, Piling, Cut Nails

Cut nails, c.l., f.o.b. mills	2.80c
Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.35c

Alloy Steel

Hot Rolled

F.o.b. Pittsburgh or Chicago

To Tonnage Users in Auto. Industry

S.A.E. Series Number	100 lbs. Bars
2100 (*½ per cent Ni. 0.10 to 0.20 per cent C)	$ 2.90 to 3.00
2300 (3½ per cent nickel)	4.00 to 4.10
2500 (5 per cent nickel)	4.90 to 5.10
3100 (Nickel chromium)	3.00 to 3.10
3200 (Nickel chromium)	4.50 to 4.75
4100 (Chromium molybdenum)	3.00 to 3.10
4100 (Cr. Mo. 0.25-0.40)	3.90 to 4.05
4615 (Ni. 1.50%; Mo. 0.10-0.20)	4.05 to 5.20
5100 (Chromium steel)	3.00 to 3.10
6100 (Cr. V., forging)	4.00 to 4.10
6100 (Cr. V., spring)	3.50 to 3.75
9200 (Silico Mang., spring steel)	3.00 to 3.20
Ni. Cr. V. (Ni. 1½%, Cr. 1%, V. 0.15%)	4.00 to 4.10

*Mill number not formally accepted by S. A. E.

Hot rolled alloy billets 4 x 4-inch and over take the same prices per gross tons as same specification of alloy bars per net ton. Sizes from 4 x 4-inch down to 2½ x 2½-inch take same basis plus $5 a ton extra. Billets smaller than 2½ x 2½-inch take bar price on net ton basis.

Cold Rolled

Cold rolled alloy steels take 1.00c a pound extra over hot rolled when mean carbon is 0.30 or under. When the carbon is above 0.30 the extra for cold rolled is 1.75c, including annealing.

Sheets

SHEET MILL BLACK

No. 24, Pittsburgh base	2.90c
No. 24, Philadelphia, delivered	3.22c
No. 24, Gary, Indiana Harbor	3.00c
No. 24, Chicago, delivered	3.05c
No. 24, Birmingham, base	3.05c

TIN MILL, BLACK

No. 28, Pittsburgh	2.90c to 3.00c
No. 28, Gary, base	3.00c to 3.10c

GALVANIZED

No. 24, Pittsburgh base	3.75c
No. 24, Philadelphia, delivered	4.07c
No. 24, Gary, Indiana Harbor	3.85c
No. 24, Chicago, delivered	3.90c
No. 24, Birmingham, base	3.90c

BLUE ANNEALED

No. 10, Pittsburgh, base*	2.10c
No. 10, Philadelphia, delivered	2.42c
No. 10, Gary, Indiana Harbor	2.20c to 2.30c
No. 10, Chicago, delivered	2.25c to 2.35c
No. 10, Birmingham base	2.30c

*Plus 10 cents for 40 inches or wider.

AUTOMOBILE

No. 20, Pittsburgh base	4.15c

Iron

No. 10, Pitts., blue ann., c.l.,	2.80c
No. 24, Pitts., box annealed, 1-pass cold rolled, carload	3.75c
No. 24, Pitts., gal., c.l.	4.85c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	4.10c

*Prices subject to quantity differentials.

Wire Products

To Jobbers in Carloads

Dealers 5 cents per 100 pounds extra f.o.b. Cleveland and Pittsburgh base.

Bright plain wire, No. 9 gage	2.50c
Annealed fence wire	2.65c
Galvanized wire, No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
	Per 100 lbs.
Wire nails	$2.65
Galvanized nails	4.65
Polished staples	3.10
Galvanized staples	3.35
Coated nails, 100 lb. kegs, subject to Sept. 1, 1926, extra, base	2.65
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts.	$20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relay, rails, Pitts. 60 to 90 lb.	27.00 to 30.00
Light rails, 25 to 45, mills	36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.75c to 2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.10c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., stand.	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	2.15c

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 and 5 per cent; on galvanized by 1½ points with a supplementary 5 per cent.

Boiler Tubes

Carload Discounts—Less-carloads 4 points Lower—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	42½
Charcoal iron, 3¼ to 4½-inch	9
Seamless hot rolled 3¼ to 3½-inch	46

Further discounts of five to seven 5 per cent for carloads on lap welded steel. On seamless hot rolled several more 5 per cents, and on charcoal from one 10 per cent to two 10 and one 5 per cents.

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Six-inch and over, Birming'm	$28.00 to 30.00
Four-inch, Birmingham	32.00 to 34.00
Four-inch, Chicago	40.20 to 42.20
Six-inch to 24-inch, Chicago	36.20 to 38.20
Four-inch, New York	40 25 to 41.60
Six-inch and over, New York	36.75 to 37.75
Standard fittings, Bir. base	$100.00

6 to 24-inch. base; over 24-inch, plus $20; 4-inch. plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

Bolts and Nuts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	70 off

Rolled thread ⅝x6 and smaller take 10 per cent lower list.

Eagle list	70 off

MACHINE BOLTS

All sizes, cut thread	70 off

Rolled thread ¾x6 and smaller take 10 per cent lower list.

Lag screws	70 off
Plow bolts, Nos. 1-2-3-7 heads	70 off
Tap bolts	70 off
Blank bolts	70 off
Stud bolts without nuts	70 off

Stove bolts, 80-10-5 off in packages; 80-10-5 with 2½ off in bulk.

Tire bolts	60-5 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in. diam. and smaller	85-5 off

SQUARE HEAD SET SCREWS

Milled	80-10 off
Upset, 1-in. diam. and smaller	80-10-10 off

Rivets

Struct., c.l., Pitts.-Cleve.	2.75c
Structural rivets, c.l., Chicago	2.85c
**Rivets, 7/16-inch and smaller, Pittsburgh, Cleveland and Chicago	70 and 10 to 70 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought, c.l., Pitts. dist.	$6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock washers (dealers)	85-5 off
Lock washers (consumers)	85 off

Pig Iron

Market Activity Subsides, but Orders Still Are Substantial—Shipments Continue to Improve—Prices Firmer

THE pig iron market continues to show vitality, although the greater share of substantial inquiries for second quarter have been closed. Inquiries for 1000, 2000 and 3000-ton lots are not so numerous as in recent weeks, but they continue to appear, while demands for smaller lots are holding up well. The volume of sales in the past week was not much over half of what it was in the preceding week. The furnace interests at Cleveland booked 32,500 tons, in comparison with 53,000 tons in the previous week, and similar conditions are indicated elsewhere. The average of daily shipments in February was equal to or better than that in January. Leading furnace interests predict March will show still further increase.

PITTSBURGH, Feb. 28.—The pig iron market here is quieter than in recent weeks. The trade expects an early division among several sellers of the Westinghouse Electric & Mfg. Co.'s requirements for second quarter at Trafford City, Pa. It is understood the minimum quotation submitted was $17.25, base, valley. The Richmond Radiator Co. wants 2000 tons for the same period. The Iron City Sanitary Mfg. Co. also is inquiring. Sales in the past week were confined to single carloads or 100-ton lots. One inquiry is pending for 300 tons of malleable, with 3.50 carbon specified. The Meadville Malleable Iron Co. wants 250 tons of malleable. The usual quotation is $17.25, valley. Contract customers are taking out iron as due them. Activity in steelmaking grades is limited to small scattered requirements. Single carloads of bessemer sell at $17.50, valley. A local independent steel interest, however, is selling small lots through middle interests at a lower delivered price in this district. Basic iron is $17, valley, but demand is lacking.

Boston, Feb. 28.—Pig iron sales in the past week totaled about 5000 tons. An inquiry for 2000 tons of No. 2 plain and No. 2X has been issued by the General Fire Extinguisher Co., Providence, R. I., while another for 1000 tons of No. 2 plain and No. 2X is pending. Prices appear firmer, mainly due to the fact that furnaces east of Buffalo are getting full differentials on most transactions. The Buffalo market continues mixed, with No. 2 plain and No. 2X still obtainable at $16.50.

New York, Feb. 28.—Sales of pig iron the past week aggregated at least 12,000 tons. Leading inquiries include 2000 tons of foundry iron for Abendroth Bros., Port Chester, N. Y., and 1000 tons for Crane Co., Bridgeport, Conn. Eastern Pennsylvania producers report sales of several thousand tons of foundry to nearby consumers at $20, base, furnace, and this price now appears to be firm. Buffalo foundry usually ranges from $16.50 to $17, base, Buffalo, for this territory, although $16.25 has not disappeared. Eastern New York state iron usually is $18, base, furnace, with somewhat lower in some instances.

Buffalo, Feb. 28.—Inquiries for close to 15,000 tons of pig iron and pending, including one lot of 5000 tons of basic for an eastern melter. Last week's sales added more than 10,000 tons to the month's total. Buffalo district prices are firm at $17, base, but in the East at least one Buffalo furnace continues to meet $16.50 competition on foundry iron.

Cleveland, Feb. 28.—Pig iron sales booked by furnace interests at Cleveland approximated 32,500 tons in the past week, against 53,000 tons the week preceding. One melter placed 3000 tons. Most business is for second quarter. Inquiries are light. The daily average rate of shipments in February equaled January for some furnaces, and exceeded it for others. One large merchant interest reports its total of February shipments was larger than that of January, despite the shorter month. Recent shipping instructions indicate the daily average for March will start better than that of February. Sales have been heavy and melters are taking iron. The price sentiment is stronger. While one Cleveland furnace continues to quote $16.75 to $17, base, furnace, for delivery outside of Cleveland, another now holds to a minimum of $17. A few sales have been made at $17.50, base. In selling in western Ohio and Indiana territory Cleveland furnaces in some instances have quoted on a Toledo basis. A Cleveland furnace took an order in the past week for 1000 tons of No. 2X iron in western Ohio at $18, base, Toledo, tending to substantiate a $17.50, base, price there. For delivery in Cleveland local furnaces continue to quote $18, base, furnace.

Detroit, Feb. 28.—Second quarter buying of pig iron is not expected to be spectacular because many melters covered in December and January for the entire first half, but the outlook is that the first quarter rate of melt will at least be equaled. On a daily average basis shipments to melters are ahead of January. Shipping instructions indicate that March will be the best month of the quarter. Stockpiles at the local furnaces are smaller than 30 days ago. A rumor that the Ford Motor Co. is selling pig iron is not verified. The market continues $18, Detroit furnace, for shipment in immediate Detroit district.

Chicago, Feb. 28.—Pig iron placed in this territory in the week compares favorably with the average of weekly sales in the past two months when more than 200,000 tons was sold in the aggregate. Buyers are now well supplied for first quarter. Several large buyers have added to the tonnage placed for second quarter. Shipments from furnaces are steady. Foundry activity in the Chicago district is spotty; both west and east of the immediate district activity is increasing. Slightly more activity is shown by malleable melters in

(*Concluded on Page* 597)

Pig Iron Prices

Per Gross ton

Bessemer, valley furnace	$17.50
Bessemer, del. Pittsburgh	19.26
Basic, valley furnace	17.00
Basic, del., Pittsburgh	18.13 to 18.76
Basic, Buffalo furnace	16.50 to 17.00
Basic, del., eastern Pa.	19.25 to 20.25
Malleable, valley furnace	17.25
Malleable, del. Pittsburgh	19.01
Malleable, del. Cleveland	18.50
Malleable, Chicago furnace	18.50
Malleable, Buffalo furnace	17.50
Malleable, del. eastern Pa.	20.00 to 21.00
No. 1 foundry, Chicago furnace	19.00
No. 1X, eastern del., Phila.	21.76
No. 1X, Buffalo furnace	18.00 to 18.50
No. 2 foundry, valley furnace	17.25
No. 2 foundry, del., Pittsburgh	19.01
No. 2 fdy., Everett, Mass., fur.	19.00 to 21.00
No. 2 foundry, Buffalo furnace	17.00
No. 2 foundry, Chicago furnace	18.50
No. 2 foundry, Granite City	19.50
No. 2 foundry, Ironton furnace	19.00
No. 2 foundry, del. Cleveland	18.50
No. 2 foundry, del. Phila.	20.76
No. 2 Virginia furnace	20.00 to 20.50
No. 2 foundry, N. J., tidewater	19.78 to 21.76
No. 2 foundry, east N. Y. fur.	18.00
No. 2 Alabama, Birmingham	16.00
No. 2 Alabama, del. Cincinnati	19.69
No. 2 Tenn., Birmingham base	16.00
No. 2 Tenn., del., Cincinnati	19.69
No. 2 Alabama, del. Philadelphia	22.01
No. 2 Alabama, del. Chicago	22.01
No. 2 Ala., del. Chicago, river-rail	20.18
No. 2 Ala., del. Boston, rail-water	22.91 to 24.77
No. 2 Alabama, del. Cleveland	22.01
No. 2 Alabama, del. St. Louis	20.42
No. 2X, east. N. J., tidewater	20.28 to 21.26
No. 2X, eastern, del. Phila.	21.26
No. 2X, foundry, Buffalo furnace	17.50
No. 2X, eastern, del. Boston	23.15 to 23.65
No. 2X, Virginia furnace	20.50 to 21.00
No. 2X, Virginia, del. Phila.	25.04 to 25.54
No. 2X, Virginia, del. Jersey City	25.37 to 25.87
No. 2X, Virginia, del. Boston	25.71 to 26.21
Gray forge, val., del., Pittsburgh	18.51
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.26 to 27.29
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Birmingham	28.00
Charcoal, Superior, del. Chicago	27.04

Silvery iron, Jackson county (Ohio) furnace, in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county (Ohio) furnace, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$40.50; 16—$43.

Coke

Furnace Fuel Market Quiet, Prices Slightly Easier—Foundry Specifications Fairly Good

DEMAND for beehive furnace coke is dull, no inquiries having developed from blast furnaces for second quarter. Small lots for delivery in March have been placed at $2.60 to $2.65. Specifications for beehive and by-product foundry coke continue fairly good. New demand is slow. By-product coke manufacturers are reaffirming February prices for deliveries in March.

Pittsburgh, Feb. 28.—Activity in the beehive coke market continues to dwindle, with no orders from blast furnaces. One inquiry for two to four carloads of furnace coke a day for March, for a large contracting company in the Philadelphia district, is understood to have been closed at $2.60 and $2.65. Single carloads bring $2.75 in the spot market. No inquiries have been issued by blast furnaces for second quarter. Heating coke is selling around $2.50. Spotty conditions are noted in the market for foundry coke, specifications against contracts increasing in some directions and decreasing in others. Some foundries are booked through to July; others are closing on second quarter requirements. Prices usually obtained on contracts are $4 to $4.50, although occasionally $3.75 and $4.75 are done. At least two brands made from washed coke command premiums, present prices being $5.10.

Production of coke in the Connellsville region in the week ended Feb. 18 was 58,630 tons, compared with 53,700 tons in the preceding week, according to the *Connellsville Courier*.

Boston, Feb. 28.—Prices of foundry coke quoted by New England producers are unchanged for second quarter, consumption shows slight improvement.

New York, Feb. 28.—Although spot demand for foundry coke is slow, specifications on contracts continue fairly good. Prices are unchanged. Spot beehive foundry coke ordinarily ranges from $3.75 to $4.25, Connellsville, while $5 generally is the top price on premium brands. The market on by-product foundry coke continues $8.30, New Jersey ovens, equivalent to $9 to $9.40, delivered, Newark.

Cincinnati, Feb. 28.—By-product coke manufacturers supplying this district have reaffirmed February prices for March. Southern beehive coke makers are expected to take similar action. Foundry coke demand in February was almost double that of January. Some producers are behind in filling orders.

Chicago, Feb. 28.—Shipments of by-product foundry coke are steady. All ovens are lighted. Some users ask rush shipments. The price for local delivery is $9.50, while $9, ovens, is asked for outside.

St. Louis, Feb. 28.—Demand for metallurgical coke is reported generally satisfactory, with some melters showing more interest in future supplies. While spotted conditions exist, the melt as a whole continues to show steady improvement. Prices are steady.

Birmingham, Ala., Feb. 28.—Production and movement of foundry coke is unchanged. There has been a little slowing down in other grades but the market is considered good. Prices are steady.

Coke Prices

Beehive Ovens

Prices per Net Ton

Connellsville furnace	$2.60 to 2.75
Connellsville foundry	3.75 to 4.25
New River foundry	7.00 to 8.00
New River furnace	6.00
Wise county foundry	5.00
Wise county furnace	4.50
Alabama foundry	5.00

By-Product Foundry

Newark, N. J., del.	9.00 to 9.40
Chicago, ovens	9.00
New England, del.	11.50
St. Louis	9.75
Birmingham	5.00
Indianapolis, del.	9.75
Ashland, Ky.	7.50
Portsmouth, O.	7.50
Detroit, ovens	9.00
Buffalo, ovens	9.00

Ferroalloys

Heavy Ferromanganese Shipments Scheduled for March

New York, Feb. 28.—Specifications on first half ferromanganese contracts have improved greatly and heavy shipments are scheduled for March. In January and February demand was slow, the usual condition following an advance in the price, as consumers specify tonnage against low price contracts. The market continues firm at $100, duty paid, tidewater. Special ferroalloys are quiet, but shipments on contracts are good. Prices are unchanged.

Pittsburgh, Feb. 28.—New business in ferroalloys is scarce. Specifications, however, are fairly regular. February shipments are ahead of January's. Prices apparently are firm.

Chicago, Feb. 28.—Several carload lots of spiegeleisen have been sold at $32, eastern furnace, for 19 to 21 per cent. The market is untested for tonnage orders, but it is believed $31 can be done. Some foundry users are buying less than carload lots of 50 per cent ferrosilicon, and also ferromanganese. The tendency is growing among foundries in the use of ferroalloys.

Cleveland, Feb. 28.—A local steelmaker is closing on 400 tons of ferromanganese, at $100, seaboard, with a domestic producer.

Steel Castings Orders on Upgrade

Washington, Feb. 28.—Bookings of commercial steel castings in January increased according to the department of commerce report. Monthly comparisons of revised figures follow:

	BOOKINGS		PRODUCTION	
Total	*Total net tons	Railway specialties	*Total net tons	Railway specialties
1926	1,035,778	404,945	1,135,955	427,016
1927				
Jan.	107,779	53,461	87,086	34,037
Feb.	94,683	41,355	88,915	35,322
March	90,041	34,680	102,836	41,232
April	81,044	32,279	94,677	39,189
May	72,744	28,946	86,942	35,236
June	90,898	39,455	87,767	34,596
July	74,246	31,011	79,726	32,576
Aug.	63,528	21,144	87,004	32,397
Sept.	52,351	18,396	70,024	25,618
Oct.	51,748	16,625	62,409	21,947
Nov.	62,683	27,639	58,997	19,146
Dec.	76,953	39,112	58,220	19,358
Total	918,698	384,103	964,603	370,654
1928				
Jan.	90,863	41,276	73,886	28,714

*For tonnage of miscellaneous castings deduct Railway Specialties from this total.

Herbert L. Hart Dies

Chicago, Feb. 28.—Herbert L. Hart, 61, manager of the bolt and rivet department of the Inland Steel Co., Chicago, died Sunday at his home. He had been active also in the railroad sales department of the Inland company. Mr. Hart became associated with the Inland company in 1910, and prior to that time had been associated with Hart Bros., Chicago, a men's furnishing business.

Ferroalloy Prices

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$100.00
Ferromanganese, del. Pittsburgh	$104.79
Spiegeleisen, 19 to 21 per cent domestic furnace	32.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	93.00
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium, carload, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

*These prices contract; spot $5 higher.

Plates

Consumers Placing Orders for Second Quarter at New Prices—Demand Continues to Improve

CONTRACTING for plates for second quarter is underway at the new price of 1.90c, Pittsburgh, and 2.00c, Chicago. The average of daily bookings in February was equal to or larger than that in January, and business continues to show improvement. Requirements are of a miscellaneous character. Car building contracts are most active in the market at Chicago.

PLATE PRICES, PAGE 582

Chicago, Feb. 28.—Car specifications and building demand help keep plate specifications active in the absence of heavy tank work for the oil fields. Plate backlogs are lighter than bar and shape orders, with deliveries lengthened to two to three weeks. Plate mill operations, however, are above 80 per cent despite the heavy capacity in this district. Several lots of tank plates have appeared on inquiry from the oil fields, which will approximate 3000 tons. Mills are quoting 2.00c but they are not pushing sales for second quarter.

New York, Feb. 28.—Eastern plate producers generally have followed the advance of the Bethlehem Steel Co. and quote 2.05c, base, Coatesville, on new business.

Pittsburgh, Feb. 28.—The second price advance of the year to date, namely $1, on Feb. 21 by Carnegie Steel Co., has been adopted by independent producers. The new price is 1.90c. Specifications against lower price contracts continue. It is stated it will not be long until the new price is fully applicable in open market sales. Several contracts have been booked for second quarter at the new level. More barges have been let, and more inquiries are coming out.

Philadelphia, Feb. 28.—Plate makers generally have advanced prices $1 a ton to 2.05c, Coatesville. The current market is 2.10c to 2.15c, delivered Philadelphia. Bookings continue fair with the February total not much under that of January.

Cleveland, Feb. 28.—Second quarter contracting in plates is under way at 1.90c, Pittsburgh. Users thus far have not displayed great interest in covering. February shipments into this territory have come close to the January total. Boiler makers are somewhat busier. Lake shipyards are poor buyers.

CONTRACTS PLACED

3000 tons, eight tanks for Roxana Petroleum Co., divided between Chicago Bridge & Iron Works and Graver Corp.

300 tons, work for Standard Oil Co. of New Jersey, New York, to unnamed seller.

500 tons, five 120 x 26 x 6½-foot barges for U. G. I. Contracting Co., Philadelphia, for use in Mississippi river flood prevention work, to Dravo Contracting Co.

170 tons, for 800 box cars for Western Pacific railroad, San Francisco, to unnamed eastern mills.

CONTRACTS PENDING

5000 tons, estimated, towboats and barges for the Marmet Coal Co., Cincinnati; bids about to be asked.

4500 tons, thirty-nine 120 x 30 x 7-foot barges, instead of 35 as noted previously; buyer may order two less or two more, depending upon nature of bidding.

3500 tons, diesel oil tanker for Standard Oil Co., San Francisco; all bids rejected.

2000 tons, penstock for Seattle; bids returned unopened.

900 tons, pipe line, Tacoma, Wash.; bids opened.

650 tons, 48-inch pipe line and penstock, Milton, Oreg.; bids opened.

500 tons, Mare Island and Puget Sound navy yards, Washington; bids in Feb. 28.

300 tons, three barges for United States engineers, Huntington, W. Va.; bids close March 30.

Unstated tonnage, ten or more wooden barges with steel frames for Mississippi river commission, Vicksburg, Miss.; bids being asked.

Canada's Imports Up

Toronto, Ont., Feb. 28.—Canada's imports in 1927 totaled $1,087,117,930, compared with $1,008,341,911 in 1926. Exports last year were valued at $1,238,782,004, against $1,283,939,268 in 1926. Canada's imports of iron at $2,875,624 and of pig iron and steel ingots at $1,889,729 both showed slight increases over 1926. Imports of rolling mill products at $44,112,343 showed a slight decline from the $47,710,207 in 1926. Canada last year exported rolled steel products valued at $1,929,129, or $700,000 worth less than in 1926.

Semifinished

Prices Stronger—Billets and Sheet Bars Advanced $1 at Chicago—Shipments Increase

THE market for semifinished steel is stronger, in response to the rising tendency in finished steel prices. At Chicago small billets and sheet bars have been advanced $1 to $34 and $35, respectively. Some makers in the Pittsburgh district are contemplating advancing sheet bars for second quarter to $35. However, business has not yet developed for that period.

SEMIFINISHED STEEL PRICES, PAGE 582

Pittsburgh, Feb. 28.—Semifinished steel is moving more rapidly on contracts. Sheet companies using slabs are expanding specifications, as are various strip companies taking billets. No new business is appearing in the open market. Some talk is heard concerning higher prices for billets, slabs and sheet bars for second quarter. Some makers indicate the sheet bar price will be raised to $35. Wire rods are quiet as regards sales at $44, but shipments on lower price contracts are fairly heavy. Skelp is inactive at 1.85c to 1.90c.

Youngstown, O., Feb. 28.—A fair volume of semifinished steel business continues to come to valley mills. Consumers apparently expect present prices to continue into second quarter. Sheet bars are $34, Pittsburgh and Youngstown, and billets and slabs $33.

Cleveland, Feb. 28.—A stronger tendency is noted in the market for semifinished steel, in line with the rising trend in finished steel products. While quotations have not been changed, there is less disposition to grant concessions. Shipments are increasing, and the leading merchant producer here is contemplating adding another open hearth to its present list of ten active.

Chicago, Feb. 28.—Semifinished producers have advanced small billets and sheet bars $1 a ton. Billets, 4 x 4 inch base, now are $34, Chicago, and sheet bars $35. Specifications are steady on first quarter contracts. Wire rods now are $45, Chicago.

British Steel Institute Schedules Meeting

The annual meeting of the Iron and Steel institute will be held in London May 3 and 4, 1928. At this meeting Benjamin Talbot will assume office as president for the year 1928-29.

Applications for grants from the Carnegie fund will be considered by the council in March. A limited number of grants are awarded, irrespective of nationality or sex, in aid of research work on some subjects of practical importance relating to the metallurgy of iron and steel or allied subjects.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Delivered to Consumers.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.75 to 11.00
Boston (dealers)	9.00 to 9.10
Buffalo, No. 1	14.50 to 15.25
Buffalo, No. 2	13.00 to 13.50
Chicago	12.75 to 13.25
Cincinnati (dealers)	11.25 to 11.75
Cleveland, No. 1	13.75 to 14.00
Cleveland, No. 2	13.25 to 13.50
Detroit, No. 1	11.25 to 11.75
Eastern Pennsylvania	13.50 to 14.00
Eastern Pennsylvania, No. 2	11.00 to 11.50
Bethlehem delivery	13.50 to 14.00
New York (dealers) (railroad)	10.00 to 10.85
New York (dealers) (yard)	7.00 to 7.50
Pittsburgh, No. 1	14.50 to 15.00
St. Louis	11.75 to 12.25
Valleys, No. 1	15.00 to 15.25

COMPRESSED SHEETS

Buffalo	12.75 to 13.25
Chicago	11.50 to 12.00
Cleveland	12.50 to 13.00
Detroit	10.25 to 10.75
Pittsburgh	14.00 to 14.50
Valleys	14.00 to 14.50

BUNDLED SHEETS

Buffalo	10.00 to 10.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	11.50 to 12.00
Eastern Pennsylvania	10.50 to 11.00
Pittsburgh	13.00 to 13.50
St. Louis	7.75 to 8.25

SHEET CLIPPINGS, LOOSE

Chicago	8.25 to 8.75
Cincinnati	8.75 to 9.25
Detroit	7.00 to 7.50
St. Louis	7.50 to 8.00

STEEL RAILS, SHORT

Birmingham	11.50 to 12.00
Buffalo	16.50 to 17.00
Chicago	15.50 to 16.00
Cincinnati (dealers)	16.00 to 16.50
Detroit	11.00 to 11.50
St. Louis	16.00 to 16.50

STOVE PLATE

Birmingham	13.00 to 14.00
Boston (consumers)	10.50 to 11.00
Buffalo	12.75 to 13.25
Chicago (net)	12.00 to 12.50
Cincinnati (dealers) net	8.50 to 9.00
Cleveland	12.00 to 12.50
Detroit (net tons)	10.50 to 11.00
Eastern Pennsylvania	12.50 to 13.00
New York (dealers) (mill)	8.25 to 8.50
Pittsburgh	12.50 to 12.75
St. Louis	13.50 to 14.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.75 to 17.25
Cincinnati (dealers)	13.00 to 13.50
Eastern Pennsylvania	17.50 to 18.50
Pitts. billet and bloom crops	18.50 to 19.00
Cleveland, billet, bloom crops	17.00 to 17.50

SHOVELING STEEL

Chicago	12.75 to 13.25
Pittsburgh	11.00 to 11.25
St. Louis	11.75 to 12.25

KNUCKLES, COUPLERS, SPRINGS

Buffalo	16.00 to 16.50
Chicago	14.50 to 15.00
Eastern Pennsylvania	16.50 to 17.00
Pittsburgh	16.50 to 17.00
St. Louis	13.00 to 13.50

FROGS, SWITCHES, GUARDS

Chicago	14.00 to 14.50
St. Louis	14.00 to 14.50

ANGLE BARS—STEEL

Buffalo	14.50 to 15.00
Chicago	14.50 to 15.00
St. Louis	12.00 to 12.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston (dealers)	10.00 to 10.50
Buffalo, No. 1	12.25 to 12.75
Buffalo, No. 2	14.25 to 14.75
Chicago, No. 1	12.60 to 13.15
Chicago, No. 2	12.75 to 13.25
Cincinnati, No. 1 (dealers)	10.75 to 11.25
Cleveland, No. 1	11.50 to 12.00
Eastern Pennsylvania	15.00 to 15.50
New York, No. 1 (dealers)	11.00 to 11.50
Pittsburgh, No. 1	11.00 to 11.50
Pittsburgh, No. 2	14.50 to 15.00
St. Louis, No. 1	10.25 to 10.75
St. Louis, No. 2	11.75 to 12.25

WROUGHT PIPE

Boston (dealers)	7.75 to 8.25
Eastern Pennsylvania	13.00
Buffalo	12.00to 12.50
New York (dealers)	8.00 to 8.50

YARD WROUGHT

Boston	9.50 to 10.00
Eastern Pennsylvania	14.50 to 15.00

BUSHELING

Buffalo	12.75 to 13.25
Chicago, No. 1	10.50 to 11.00
Chicago, No. 2	8.50 to 9.00
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cincinnati, No. 2	6.50 to 7.00
Cleveland, No. 2	10.00 to 10.25
Pittsburgh, No. 1	12.00 to 12.50
St. Louis, No. 1	9.75 to 10.25
Detroit, mixed	7.25 to 7.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston	5.75 to 6.25
Buffalo	8.75 to 9.25
Chicago	8.00 to 8.50
Cincinnati (dealers)	8.00 to 8.50
Cleveland	9.00 to 9.25
Detroit	7.25 to 7.50
Eastern Pennsylvania	11.00
New York (dealers)	7.00 to 7.50
Pittsburgh	10.75 to 11.25
St. Louis	7.75 to 8.25

CAST IRON BORINGS

Birmingham (chemical)	13.00 to 13.50
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	9.50 to 10.00
Boston (dealers)	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago	10.00 to 10.25
Cincinnati (dealers)	8.75 to 9.25
Cleveland	10.00 to 10.50
Detroit	8.25 to 8.50
Eastern Pennsylvania	11.00
Eastern Pennsylvania (chem.)	14.50 to 15.00
New York (dealers)	6.75 to 7.35
Pittsburgh	11.00 to 11.25
St. Louis	9.00 to 9.50
Valleys	13.50

MIXED BORINGS AND TURNINGS

For blast furnace use

Boston (dealers)	5.75 to 6.25
Buffalo	10.25 to 10.75
Cincinnati (dealers)	8.75 to 9.25
Cleveland	10.25 to 10.75
Detroit	8.00 to 8.25
Eastern Pennsylvania	10.50 to 11.00
New York (dealers)	6.75 to 7.35
Pittsburgh	11.00 to 11.25

PIPES AND FLUES

Chicago (net)	8.50 to 9.00
Cincinnati (dealers)	7.75 to 8.25
St. Louis	9.50 to 10.00

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago (net)	12.25 to 12.75
Cleveland	12.00 to 12.50
Eastern Pennsylvania	12.50 to 13.00
New York (dealers)	8.25 to 8.75
St. Louis	12.00 to 12.50

FORGE FLASHINGS

Boston (dealers)	6.50 to 7.00
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cleveland (over 10 in.)	12.50 to 13.00
Detroit	9.50 to 10.00
Pittsburgh	13.00 to 13.50

FORGE SCRAP

Boston (dealers)	6.00 to 6.50
Chicago	15.50 to 16.00
Eastern Pennsylvania	11.00

ARCH BARS AND TRANSOMS

Chicago (net)	18.50 to 19.00
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	6.75 to 7.00
Buffalo	13.00 to 13.50
Chicago	10 25 to 10.75
Cleveland	12.00 to 12.25
Eastern Pennsylvania	12.00 to 12.50
Pittsburgh	13.00 to 13.50
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	16.00 to 17.00
Boston (shipping point)	15.50 to 16.00
Buffalo	16.75 to 17.25
Chicago	17.90 to 18.50
Cleveland	16.00 to 16.50
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	18.00 to 18.50
St. Louis	20.00 to 20.50

SHAFTING

Boston (shipping point)	13.00 to 13.50
Chicago	17.35 to 17.90
Eastern Pennsylvania	17.50 to 18.00
New York (dealers)	14.00 to 14.50
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	14.00 to 15.00
Boston (consumers)	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	16.00 to 16.50
Chicago, iron	14.25 to 14.75
Chicago, rolled steel	15.50 to 16.00
Cincinnati	12.50 to 13.00
Eastern Pennsylvania	16.00 to 16.50
New York iron (dealers)	12.00
Pittsburgh, iron	14.25 to 15.00
Pittsburgh, steel	16.50 to 17.00
St. Louis, iron	14.25 to 14.75
St. Louis, steel	14.25 to 14.75

NO. 1 CAST SCRAP

Birmingham, cupola	14.00 to 14.50
Boston	14.50 to 15.00
Buffalo	14.50 to 15.00
Chicago, No. 1 machinery	15.65 to 16.25
Chicago, No. 1 railroad	14.85 to 15.40
Chicago, No. 1 agricultural	14.55 to 15.10
Cincinnati No. 1 machinery cupola (net tons dealers)	14.50 to 15.00
Cleveland, cupola	16.50 to 17.00
Detroit (net tons)	12.25 to 12.75
Eastern Pennsylvania (cupola)	16.50 to 17.00
New York, cupola (dealers)	13.50
Pittsburgh, cupola	14.50 to 15.00
San Francisco, delivered	20.00 to 21.00
Seattle	14.50 to 14.75
St. Louis, railroad	13.50 to 14.00
St. Louis, agricultural	13.50 to 14.00
St. Louis, machinery	14.00 to 14.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo (breakable)	11.50 to 12.00
Cleveland (breakable)	12.25 to 12.50
Detroit (automobile) (net tons)	20.00 to 21.00
Eastern Pennsylvania	15.50 to 16.00
New York (dealers)	11.75 to 12.00
Pittsburgh	13.00 to 13.50

MALLEABLE

Boston, railroad	13.50 to 14.00
Buffalo	15.25 to 15.75
Chicago, agricultural	11.75 to 12.25
Chicago, railroad	12.75 to 13.25
Cincinnati, railroad (dealers)	12.50 to 13.00
Cincinnati, agricultural (dealers)	12.25 to 12.75
Cleveland, agricultural	15.00 to 15.50
Cleveland, railroad	15.50 to 16.00
Detroit, auto	14.50 to 15.00
Pittsburgh, railroad	14.50 to 15.00
St. Louis, agricultural	12.50 to 13.00
St. Louis, railroad	12.50 to 13.00

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	13.50 to 14.00
Boston (dealers)	10.00 to 10.50
Buffalo	14.50 to 15.00
Chicago	15.00 to 15.50
Eastern Pennsylvania	15.25 to 15.50
New York	11.00 to 12.00
Pittsburgh district	16.25 to 16.75
St. Louis	14.25 to 14.75

LOCOMOTIVE TIRES

Chicago, No. 1	14.00 to 14.50
Chicago, cut	16.00 to 16.50
St. Louis, No. 1	12.50 to 13.00

LOW PHOSPHORUS PUNCHINGS

Chicago	14.00 to 14.50
Pittsburgh	16.50 to 17.00

Scrap

Consumers Rule Market and Offer Lower Prices—Quotations Recede Slowly

PROGRESSIVE and steady weakness is evident in iron and steel scrap. Prices are slipping a step at a time and levels are distinctly lower. Consumers have sufficient reserve to meet needs and in the face of large supply are making low offers and thus wearing down quotations. Most sales are small lots, with a fairly large aggregate tonnage.

Chicago, Feb. 28.—With the purchase of about 10,000 tons of heavy melting steel at $13, this grade is about 25 cents weaker. A large consumer of heavy melting steel is refusing sellers' offers at $13.50, although he paid this price a week ago for a round tonnage. Several grades show weakness. Consumer buying is less active as most melters covered in the recent buying movement.

Boston, Feb. 28.—Prices of iron and steel scrap are lower, but not to a marked extent. Machine shop turnings, blast furnace borings and turnings, pipe and chemical borings all showed a slight decline. Shipments have displayed a decreasing tendency. Brokers find it harder to buy materials at going prices, while steel mills as a rule have shown a decidedly more rigid inspection of materials.

New York, Feb. 28.—Iron and steel scrap is weaker. This follows the placing of substantial business earlier in the month and subsequent withdrawal of some larger consumers from the market. Supplies are plentiful. A Phoenixville, Pa., consumer is inquiring for several grades, including turnings, yard steel, skeleton steel and stove plate, but is offering 50 cents a ton under recent prices. He is understood to offer $10.50, delivered, for turnings and $12.50, delivered, for stove plate. A downward revision in wrought pipe features the dealers buying market here, as all the other grades are unchanged.

Pittsburgh, Feb. 28.—Scrap is moving in comparatively small quantities. Some heavy melting steel was reported sold at above $15, but that is the top offer by consumers. Some dealers are still able to pick up lots at some consuming points at $14.50. Three lots of steel specialties of 500 tons each were sold at a little above $17. The West Virginia buyer who continues to operate practically full, is taking offerings when figures prove attractive. Other consumers pursue the same policy and thus hold control of the market.

Pennsylvania railroad is offering 36,785 tons of assorted grades for bids March 7. The auxiliary list offers 3500 tons additional.

Buffalo, Feb. 28.—There has been no tonnage buying of heavy melting steel but negotiations for purchases are in progress. Ideas of value range from $14.50 to $15.25, giving consumers an unusual opportunity to shop. Other materials have moved in small lots at considerably lower prices than early in February.

Cleveland, Feb. 28.—Dealers in iron and steel scrap find increasing difficulty in making shipments, consumers continuing to hold up consignments. Active steelmaking operations still fail to affect the scrap market, owing to consumers' large supplies of old material. In the absence of market activity prices generally are unchanged. Blast furnace grades are weaker, with cast iron borings quoted at $10 to $10.50, off 25 cents, and No. 2 busheling down to $10 to $10.25, against the former range of $10.25 to $10.75.

Detroit, Feb. 28.—A mixed market is presented by iron and steel scrap. Turnings, which have been bought freely by dealers at $7.25, have been bid in at $7.50. Sheet clippings, busheling and shovel turnings are a shade weaker. Compressed sheets, quoted at $10.25 to $10.75, are coming out more freely. One automobile interest offers loose clippings because of inadequate compressing facilities.

Cincinnati, Feb. 28.—Slightly larger movement of scrap is under way, but at lower prices. Heavy melting steel, railroad wrought and pipes and flues are down 25 cents and stove plate, busheling and turnings, 50 cents.

St. Louis, Feb. 28.—Purchasing of iron and steel scrap has narrowed further and general weakness in prices and several additional reductions are noted. The chief cause of these conditions is oversupply in hands of sellers and consumers. The melt is holding up extremely well, in fact is increasing, but not in proportion to supplies of available scrap. Steel angle bars were cut $1 per ton, and fractional declines were made on kindred items.

Birmingham, Ala., Feb. 28.—Little change is seen in the iron and steel scrap market. Heavy melting steel quotations are practically made by consumers. No. 1 cast and stove plate are still the more active of the old materials.

Philadelphia, Feb. 28.—Many small and some moderate size sales of iron and steel scrap have been effected, but with no changes in prices except borings, which are slightly easier.

Sheets

Second Quarter Bookings Moderate—Prices Not Fully Established—Current Demand Good

CURRENT sheet demand is fairly active, and mill operations generally are satisfactory. Bookings for second quarter, however, are moderate in size, and the new prices have not been subjected to a decisive test. Automotive consumers are about to cover for second quarter. Automotive demand reflects better operating schedules.

SHEET PRICES, PAGE 582

Pittsburgh, Feb. 28.—More bookings for second quarter are coming to sheetmakers here at 4.15c for full finished, 2.90c for black, 3.75c for galvanized, and 2.10c for blue annealed. Some concessions recently were granted on galvanized corrugated but on flat sheets the market is firm. Some customers increased their coverage for second quarter. Efforts to place tonnages at lower figures were unsuccessful. Specifications against first quarter contracts in some instances are up to mill capacity and in others exceed capacity. Demand for full finished indicates real expansion in operating schedules at automobile plants. Deliveries from some western mills are deferred four or five weeks. Jobbers order only what they cannot do without. The general operating average at sheet mills is 80 to 85 per cent. American Sheet & Tin Plate Co. continued on a 77 per cent basis last week.

Buffalo, Feb. 28.—Heavy buying of automobile sheets continues. Delivery dates are becoming a factor of importance in placing contracts. Steelworks prepared to give quick shipments are getting close to top prices even on large tonnage.

Chicago, Feb. 28.—Sheet specifications in this district are active, and some important tonnages have been placed for second quarter. Some business that has been pending for some time has been placed at current prices. Chicago delivered prices are 3.05c for No. 24 black; 3.90c for No. 24 galvanized, and 2.25c to 2.35c for No. 10 blue annealed.

St. Louis, Feb. 28.—While the movement of sheets is in fair vol-

ume, new buying and specifications are less satisfactory than early in the month. Prices are steady and producers still have a fair backlog.

Youngstown, O., Feb. 28.—Routine orders appear to be coming to sheetmakers in this district. Some makers of autobody sheets have specifications to insure full operations several weeks, while others have not enough to operate all their units. Generally, sheet mills here are operating at 85 per cent, unchanged from last week, 87 per cent two weeks ago and 71 per cent three weeks ago. Quotations continue firm, common black being 2.90c, Pittsburgh, blue annealed 2.10c, galvanized 3.75c and autobody 4.15c.

New York, Feb. 28.—Although mills are ready to accept second quarter sheet contracts at prevailing prices, there has been no contracting of size. Prices are firm. A few exceptions are noted but they apply to a small percentage of business.

Cleveland, Feb. 28.—Sheet steel mills are booking second quarter contracts at the full market levels of 2.10c, Pittsburgh, for blue annealed, 2.90c for black and 3.75c for galvanized. Second quarter contracts approximate those of the first quarter in tonnage. Some mills continue operating at full practical capacity. Few large specifications are being received but the number of small releases is sufficient to keep mills on good schedules.

Philadelphia, Feb. 28.—Sheet specifications improved in the past week. Some second quarter contracts have been placed at full prices. The only shading of prices in in connection with orders for March shipment.

Southern Fields Lose in Coal Rate Battle

Washington, Feb. 28.—With the interstate commerce commission refusing to grant a reduction of 20 cents per ton in bituminous coal freight rates from southern West Virginia, eastern Kentucky and Tennessee and southwestern Virginia to Lake Erie ports for trans-shipment, the eastern Ohio and Pittsburgh district operators retain the advantage of last year's reduction.

When the commission cut the Ohio and Pittsburgh rate to Lake Erie ports 20 cents, thereby practically reestablishing the prewar relationship between various fields, the southern districts insisted on a similar reduction, now refused. The 1928 rates on bituminous coal to Lake Erie ports will be $1.43 from the Ohio No. 8 field, $1.46 from the Pittsburgh district and $1.91 from West Virginia and Kentucky. The Ohio haul is 151 miles and the West Virginia-Kentucky, 300 miles.

Licenses Continuous Mill

The American Rolling Mill Co., Middletown, O., has licensed the Wheeling Steel Corp., Wheeling, W. Va., to use its continuous mill patents.

The Gould Coupler Co. plant at Depew, N. Y., is now operating full shifts day and night, having tripled its force since Jan. 1.

Tin Plate

Shipments Heavy—Order Placed for 100,000 Boxes

TIN PLATE PRICES, PAGE 582

Pittsburgh, Feb. 28.—Tin plate shipments are relatively high. Specifications continue to be received for standardized requirements of container manufacturers. From time to time orders involving several thousand base boxes develop. One interest is understood to have placed last week with independent makers at least 100,000 base boxes. Export demand is improving, with better prices. Welsh and English makers have agreed to shut down for a full week after operating three consecutive weeks. This program will be in force for two or three months. The domestic price on tin plate is $5.25.

New York, Feb. 28.—Nippon Oil Co. of Japan has placed 63,500 boxes of tin plate for second quarter delivery in Japan. The entire order went to British makers who quoted a lower price than the American mills. American makers say present indications are 1928 will be an unusually large tin plate year. Eastern mills are running full, and specifications are increasing.

F. H. Craig Is Dead

Aurora, Nebr., Feb. 28.—F. H. Craig, 40, president of the Treadwell Construction Co., fabricator of steel plates, tanks, etc., and Midland Barge Co., both of Midland, Pa., died today, following the crashing of an airplane in which he was a passenger.

Freight rates on steel drop forging billets, in carloads, from Massillon, O., to Syracuse, N. Y., have been found inapplicable by the interstate commerce commission.

Pipe

Conduit Market More Active and Jobber Pipe Buying Expands—Cast Also Improves

EXPANSION in demand for conduit is one of the prominent features of the tubular products market. Merchant pipe buying is heavier as jobbers lay in stocks for Spring building work. Line pipe is inactive, but several attractive prospects are being negotiated. Cast buying also shows improvement. Akron, O., has taken bids on 1500 tons.

PIPE PRICES, PAGE 582

Pittsburgh, Feb. 28.—A recent development in the pipe market is expansion in demand for conduit. Orders have been exceedingly heavy the past few weeks and reflect the broader building programs being carried out. Buttweld standard full weight merchant pipe orders are being received in greater number from jobbers who are lining up stocks against spring expansion in demand. Nothing more has been heard concerning projected gas lines, but early action is expected on one or two for the Middle West. The largest involves in excess of 100,000 tons of 20 to 24-inch pipe for a line to Kansas City. Oil line inquiries still are withheld. Pipe mill operations are 65 to 70 per cent.

New York, Feb. 28.—Prices submitted on approximately 2000 tons of 6 to 20-inch cast pipe for the city Feb. 27 were among the lowest quoted on a local job in many months. R. D. Wood & Co. were low bidders offering $35.75, delivered city yards, on the 8 and 12-inch pipe, which consisted of about two-thirds of the tonnage, and $36.75 for the 6 and 20-inch, of which 200 tons constituted the former and 400 tons the latter. Figuring the freight from Birmingham to New York at $9.25 and the handling charge at $1.50, the prices figure back to $25 and $26, Birmingham. Roughly, the bids of Warren Foundry & Pipe Co. averaged about $1.75 a ton higher; of United States Cast Iron Pipe & Foundry Co. a little more than $2; and of Donaldson Iron Works, $3.

R. D. Wood & Co. also were low on one portion of the 300 tons of fittings, as were also Terminal Supply Co. and Stewart Steel Products Co. R. D. Wood & Co. were low on approximately 400 tons of six and 12-inch pipe for Schenectady, N. Y., with a reported bid of around $35, delivered. While the market generally continues quiet, an improvement is expected shortly as spring approaches.

Chicago, Feb. 28.—More cast iron water pipe business is appearing than for some weeks. Akron, O., opens bids today on 1500 tons of 6 to 16-inch pipe. Rockford, Ill., opened bids yesterday on 500 tons of 6 to 24-inch pipe. The 1633 tons of pipe for Chicago will be awarded about March 1. It is understood a fair volume of municipal work is contemplated for about the second week in March. A fair volume of contract business is going. The range quoted is $28 to $30, base, Birmingham.

Birmingham, Ala., Feb. 28.—Production is still fairly good and shipments are steady. Spring delivery will start in two to three weeks and increased production will follow. Quotations still are on the $28 to $30 base for 6-inch and over sizes. Con-

siderable stock is on yards. Unfilled tonnage continues less than at this time last year.

CONTRACTS PLACED

1055 tons, 8-inch class 350, Los Angeles, to American Cast Iron Pipe Co.
909 tons, 6-inch class 350, Los Angeles, to Pacific States Cast Iron Pipe Co.
600 tons, 6 and 8-inch class C pipe for Vancouver, B. C., to Leith, Murray & Co., for United States pipe.
575 tons, 6, 8 and 12-inch class D for Vancouver, B. C., to Grinnell Co. of Canada, Ltd., for Belgian pipe.
156 tons, 4 to 8-inch class B improvement to Pacific street, Oceanside, Calif., general contract to Miracle Construction Co.

CONTRACTS PENDING

3095 tons, 4 to 12-inch class B, Southgate, Calif., Leo Vukich, low bidder.
2000 tons, 6 to 20-inch cast pipe for department of water supply, gas and electricity, New York; R. D. Wood & Co. low; on approximately 300 tons of fittings low bidders were R. D. Wood & Co., Terminal Supply Co. and Stewart Steel Products Co.
1500 tons, 6 to 16-inch pipe for Akron, O.; bids opened Feb. 28.
663 tons, 6 to 20-inch class B and C, Santa Barbara, Calif.; bids in March 1.
526 tons, 4 to 8-inch class B, East Palo Alto water works district, Redwood City, Calif.; George C. DeGolyer, low bidder.
500 tons, 6 to 24-inch pipe for Rockford, Ill.; bids in.
475 tons, 6 to 24-inch pipe for Saginaw, Mich., Lynchburg Foundry Co. low bidder at $36.23 delivered, or $28, base, Birmingham. James B. Clow & Son low bidders on fittings.
426 tons, 4 to 12-inch class B, improvement to Saturn avenue, Huntington Park, Calif.; bids returned unopened.
400 tons, 6 to 12-inch pipe, Schenectady, N. Y.; R. D. Wood & Co. low bidders.
222 tons, 4 to 8-inch class B, Armona, Calif.; bids opened.
188 tons, 20-inch class C, Tacoma, Wash.; bids in Feb. 27.
145 tons, 4 and 6-inch class B, State fair ground, Sacramento, Calif.; general contract to James Young.
137 tons, 4 to 10-inch class 150, Modesto, Calif.; bids opened.
136 tons, 18-inch class C, San Diego, Calif.; bids opened.
128 tons, 48-inch class A, North outfall sewer, Los Angeles; United States Cast Iron Pipe & Foundry Co. low bidder.

Bar Iron Wages Stand

Pittsburgh, Feb. 28.—Bar iron wages will remain unchanged in March and April. The average price of bar iron in January and February was 1.85c, as in November and December. This continues the puddlers' present wage of $11.55 per ton. Following is a comparison of reported sales price averages:

	1928	1927	1926	1925	1924
Jan.-Feb.	1.85c	1.95c	2.00c	2.00c	2.35c
Mar.-Apr.	.....	1.95c	2.05c	2.35c	2.35c
May-June	.....	1.95c	2.00c	2.05c	2.25c
July-Aug.	.....	1.95c	2.00c	1.95c	2.15c
Sept.-Oct.	.....	1.90c	2.00c	1.95c	2.10c
Nov.-Dec.	.....	1.85c	2.00c	1.95c	2.05c
Yearly av.	.....	1.90c	2.00c	1.99c	2.21c

Lebanon Iron Co., Philadelphia, has been granted a drawback on spikes, bolts and rivets made from imported steel bars.

Bars

Price Advance Made General—Some Selling for Second Quarter—Backlogs Growing

GENERAL adoption of advanced prices on soft steel bars by all makers and some small bookings for second quarter at that level indicate ultimate establishment of the more remunerative figure. Specifications against lower priced tonnage are stimulated by the advance. Deliveries are deferred at Chicago, but Pittsburgh mills are working backlogs down rapidly.

BAR PRICES, PAGE 582

Chicago, Feb. 28.—Naming of 2.00c for bars, plates and shapes by the leading interest for second quarter, with the usual $2 differential for lots of under 100 tons, has been followed by independent mills. The advance is expected to drive in specifications on existing contracts, just as in the two preceding advances. Shipments of alloy, merchant bars, and rail steel bars continue heavy. Deliveries on soft steel bars still are four or five weeks deferred. Farm implement works, while approaching the end of active manufacturing for the spring trade, are busy on tillage tools, and continue heavy bar consumers. Road machinery builders are specifying steadily. The March outlook for the automotive trade is encouraging. Specifications are ahead of shipments, and in the past week sales also have eclipsed shipments. Specifications on first quarter contracts are expected to be heavy in the next few weeks.

Iron bars have been advanced to 2.00c. in line with finished steel. Backlogs of iron bars are light. Specifications are moderately active.

Pittsburgh, Feb. 28.—Contracting for soft steel bars for second quarter has started in a small way at the new price of 1.90c, Pittsburgh. Following announcement by Carnegie Steel Co. of an advance to that level, a week ago, independent makers followed at once. Tonnages on mill books at lower prices are being worked out rapidly as specifications have expanded and are taking up contracts faster than expected. Cold bar finishers are specifying actively and other large users are taking tonnages. Jobbers continue to order sparingly.

Youngstown, O., Feb. 28.—Much larger volumes of steel bar specifications than in several months are flowing to mills here since announcement of the price advance to 1.90c, Pittsburgh. Most of this business had been booked previously at 1.85c. Mill operations are expanding, yet more evidences appear of something like backlogs.

Detroit, Feb. 28.—Sellers of soft steel bars are about to solicit second quarter contracts on the basis of 1.90c, Pittsburgh. Producers at Cleveland are increasing to 1.90c, Cleveland. February shipments on bars into this territory are higher than January, on a daily rate basis. March is expected to prove the best consuming month of the quarter. Warehouses have been good buyers, reflecting demand upon them.

New York, Feb. 28.—Steel bar makers generally have followed the recent advance and now are quoting 1.90c, base, Pittsburgh, on new business.

Cleveland, Feb. 28.—All outside makers are quoting 1.90c, Pittsburgh, on bars and beginning to take second quarter contracts. As yet comparatively few users are under contract. The local mill is quoting 1.90c, Cleveland. On a small lot of bars involving a score of sizes a local mill has quoted a compromise between a mill and a warehouse price. On a daily basis, February orders measure up to January. Automotive interests are the most active buyers. March promises to be the best month of the quarter.

Iron Ore

Ford Company Increases Inquiry for Iron Ore About 25 Per Cent

IRON ORE PRICES, PAGE 615

Cleveland, Feb. 28.—Ford Motor Co. has entered the market for slightly more than 400,000 tons of Lake Superior iron ore, the first important inquiry this season. For several years the company has issued inquiries at about this time; purchases have followed about a month later, and the prices have established the open market quotations for the year. It is the largest single inquiry on which producers have to figure from year to year. Long-term contracts generally are the rule. The inquiry this year is for about 25 per cent more than the inquiry in 1927. It calls for various grades, including basic, manganiferous, silicious and high phosphorus, with basic predominating. Final action is not expected for several weeks. The Ford company's Imperial mine, Marquette range, Mich., produced 107,310 tons in 1927 and 108,167 tons in 1926. The company's new Blueberry mine, Marquette range, probably will not be ready to make shipments in 1928.

Structural Shapes

Inquiries Supplant Awards as Market Leader —Five New York Projects Total 100,000 Tons—Price Firmness More Evident

ACTIVITY in the structural market during the week was confined largely to inquiries. In New York, where prospective work has been appearing at a better rate, contracts generally averaged under 1000 tons. Five projects for midtown New York will require almost 100,000 tons. Headed by the Marshall Field and garage buildings in Chicago, outstanding inquiry there exceeds 100,000 tons with inquiry accumulating rapidly.

Price advance of last week, followed by independent producers, has added to the increasing strength of the market. Aided by good specifications, some mills claim that operations soon will begin on 1.90c, Pittsburgh, bookings. Fabricated quotations continue in wide range, with attractive jobs going at low prices.

STRUCTURAL SHAPE PRICES, PAGE 582

New York, Feb. 28.—Contrasting sharply with exceptionally large tonnages for buildings recently noted as contemplated for erection here, are the almost uniformly small tonnages now being placed. With few exceptions, including a 6000-ton loft building, the larger orders have been averaging well under 1000 tons each. The general run of active inquiries has averaged somewhat higher, although few of the exceptionally large projects now talked of can be included. Incidentally, five of the larger projects, proposed for the midtown section, will require close to 100,000 tons. Announcement of a $1 advance by Bethlehem Steel Corp. has stiffened the shape market, which now may be quoted at 2.145c to 2.195c, New York.

Boston, Feb. 28.—Structural interests in this section of the country are at about the lowest ebb in contracts in a long time. With little ahead, the bulk of business is confined to small lots, for filling-in purposes.

Pittsburgh, Feb. 28.—The $1 price advance in structural shapes inaugurated Feb. 21 by Carnegie Steel Co. and followed by independent producers is now universally quoted for second quarter. Releases against lower priced contracts for this quarter have been fairly heavy of late, and some makers claim it will not be long until they start work against the 1.90c obligations. Fabricating shops continue to enjoy good inquiry although many owners are slow in closing. The state department of labor and industry recently made a compilation of new projects pending in the state and these have a value of $342,944,000.

Cleveland, Feb. 28.—The slate of prospective structural work in this district is almost cleaned. Few inquiries were brought out during the week, and although numerous projects remain unclosed, few are of the type expected to procede within the near future. Plain material prices are firm at 1.90c, Pittsburgh, for spot delivery and second quarter booking. Fabricators report that level difficult to shade despite the attractiveness of tonnage. Fabricated and erected quotations continue wobbly, a recent local letting being closed at $80 to $90 a ton, erected.

Chicago, Feb. 28.—Fresh inquiry for structural material is in less volume than in many weeks. Numerous active projects are pending. Fabricators usually want early delivery on plain material, but shipments continue to be lengthened to four or five weeks, which will carry mill operations at capacity up to second quarter. It is understood financing is proceeding for the proposed garage project in Chicago, which will take about 10,000 tons of structurals. Awards during the week amounted to about 10,000 tons. Specifications are heavy on the 1.90c contracts. All mills are naming 2.00c for second quarter.

Philadelphia, Feb. 28.—Structural steel makers generally are following the recent advance of $1 a ton, and 2.05c, Bethlehem, is the new figure, this being equivalent to 2.18c, delivered Philadelphia. The current market may be quoted 2.07c to 2.18c, delivered Philadelphia. Eastern shape mills are operating around 75 per cent, with shipments considerably in excess of orders.

Awards Compared

	Tons
Awards this week	38,583
Awards last week	56,174
Awards two weeks ago	59,348
Awards this week in 1927	52,439
Average weekly awards, Feb.	55,475
Average weekly awards, 1928	51,920
Total awards to date, 1927	351,222
Total awards to date, 1928	415,361

CONTRACTS PLACED

7400 tons, Sixteenth street viaduct, Milwaukee, 6000 tons to American Bridge Co. and 1400 tons for lift span to Milwaukee Bridge Co. Previous reporting of award with bids in Feb. 16 issue.

6000 tons, Lefcourt loft building, Seventh avenue and Twenty-fifth street, New York, to Levering & Garrigues Co.

4000 tons, addition to Drake hotel, Chicago, to American Bridge Co.

3080 tons, Greenpoint avenue bridge, over Newton creek, Queens, New York, to Bethlehem Steel Co.

3000 tons, Integrity Trust building, Philadelphia, to McClintic-Marshall Co.

2200 tons, loft building, Thirty-fifth street and Eighth avenue, New York, to Harris Structural Steel Co.

2000 tons, hotel for Harper organization at Forty-ninth street and Lexington avenue, New York, previously noted awarded unstated fabricator, went to Harris Structural Steel Co.

2000 tons, extension to open-hearth building, Otis Steel Co., Cleveland, to Wellman-Seaver-Morgan Co.

1800 tons, office building for Atchison, Topeka & Santa Fe railroad in Texas, to unstated fabricator.

1700 tons, bridges for Boston & Maine railroad, to Phoenix Bridge Co.

1700 tons, highway bridge, Pekin, Ill., to Vincennes Bridge Co.

1600 tons, loft, New York, to McClintic-Marshall Co.

1500 tons, office building for Stimson Realty Co. at Fourth and Union streets, Seattle, to Wallace Bridge & Structural Steel Co.

1400 tons, two viaducts, Boulevard of the Allies, Pittsburgh, to McClintic-Marshall Co.

725 tons, power house, San Diego, Calif., to McClintic-Marshall Co.

600 tons, building for Campbell Soup Co., Chicago, to Hansell-Elcock Co.

600 tons, plant buildings for Du Pont interests, Belle, W. Va., including extensions to ammonia plant, generator house and storage building, to McClintic-Marshall Co.

550 tons, apartment building at 1325 Astor street, Chicago, to New City Iron Works.

500 tons, Ambassador apartments, Pittsburgh, to McClintic-Marshall Co.

480 tons, addition to Heinz plant, Berkeley, Calif., to Austin Co.

450 tons, alterations to department store of Best & Co., Fifth avenue and Thirty-fifth street, New York, and a 2-story bank, 85 Main street, Flushing, Long Island, N. Y., to Hay Foundry & Iron Works.

410 tons, high school, Elizabeth, N. J., to Guibert Steel Co.

400 tons, school, Lakeville, Long Island, N. Y., to Lehigh Structural Steel Co. previously noted awarded unstated fabricator.

325 tons, apartment, 69-73 East Seventy-seventh street, New York, to George A. Just Co.

280 tons, hotel, Jones and Eddy streets, San Francisco, to Judson-Pacific Co.

265 tons, George W. Childs school, Philadelphia, to McClintic-Marshall Co.; this project noted in a recent issue as placed with this fabricator was mentioned as being in New York.

250 tons, nurses' home, Worcester, Mass., to unnamed fabricator.

230 tons, coal and coke burner to be constructed at New Haven, Conn., by Mead-Morrison Mfg. Co., East Boston, Mass., to McClintic-Marshall Co.

203 tons, bars, shapes and joists, building for Steel Improvement & Forge Co., Cleveland, through J. L. Hunting Co., that city, to Truscon Steel Co.

200 tons, building for Cramp Co., Camden, N. J., to Bethlehem Fabricators Inc.

200 tons, United States Cast Iron Pipe & Foundry Co. storage building, Burlington, N. J., to American Bridge Co.

200 tons, Camden Rail & Harbor Terminal warehouse, Camden, N. J., to Bethlehem Fabricators Inc.

190 tons, miscellaneous work in the Pittsburgh district, including 100-ton garage at Woodlawn, Pa., to Guibert Steel Co.

170 tons, apartment, Laguna and Sacramento streets, San Francisco, to McClintic-Marshall Co., central works.

150 tons, bridge for Chesapeake & Ohio railroad, to American Bridge Co.

140 tons, miscellaneous work in the Pittsburgh district, including 90-ton building for Pack-

ard Motor Co. to W. N. Kratzer Co.
127 tons, theater, Daly City, Calif., to Dyer Bros.
125 tons, hall for Native Daughters of the Golden West, San Francisco, to McClintic-Marshall Co., central works.
125 tons, Wenatchee converter building, Armour building, Seattle, and conveyor supports for Glacier Gravel Co., Tacoma, Wash., to Isaacson Iron Works.
123 tons, town office building, Weymouth, Mass., to Palmer Steel Co.
120 tons, building for Cleveland Packard Co., Cleveland, to T. H. Brooks Co.
115 tons, theater, Steiner and Chestnut streets, San Francisco, to Pacific Structural Iron Works.
105 tons, building for Hubbard & Co., Inc., Pittsburgh, through Russ Engineering Co., to McClintic-Marshall Co.
100 tons, pump station, City sanitarium, St. Louis, to Mississippi Valley Structural Steel Co.
100 tons, police gymnasium building, St. Louis, to Mississippi Valley Structural Steel Co.
100 tons, apartment, Lombard and Polk streets, San Francisco, to McClintic-Marshall Co., central works.
100 tons, junior high school, West Orange, N. J., to Jones & Laughlin Steel Corp.
100 tons, building for Capstan Glass Co., Connellsville, Pa., to Pittsburgh Bridge & Iron Works.
Unstated tonnage, forge plant for Chevrolet Motor Co., Detroit, to unnamed maker.
Unstated tonnage, Industrial Trust Co. branch building, Providence, R. I., to Providence Steel & Iron Co.
Unstated tonnage, Fire Association of Philadelphia building, Philadelphia, to American Bridge Co.

CONTRACTS PENDING

15,000 tons, bridge for Port Authority commission, over Kill Van Kull, New York; specifications to be issued about May 5.
15,000 tons, estimated, New Yorker hotel, Eighth avenue, New York, specifications expected shortly.
3500 tons, Austin high school, Chicago; steel bids to be taken March 15.
2250 tons, New York anchorage and tower foundations of Hudson River bridge, New York; bids open March 5.
1500 tons, Masonic temple, 105 East 106th street, New York.
1500 tons, diesel oil tanker for Standard Oil Co., San Francisco; bids rejected.
1200 tons, theater, East Liberty, Pittsburgh; bids asked.
700 tons, highway over Wolf river at Shawano, Wis.
500 tons, New York Genealogical society building, New York.
500 tons, government hangars, Hampton Roads, Va.; bids asked.
400 tons, hotel, Woonsocket, R. I., Lamoureux Bros., Woonsocket, general contractors.
300 tons, apartment, 304 East Forty-fourth street, New York.
300 tons, Hunts Point library, Queens, New York.
300 tons, building for United Gas Improvement Corp., Philadelphia, for erection at Clinton, Iowa; bids asked.
295 tons, column cores for a loft, Varick and Dominick streets, New York.
250 tons, club, 122 East Eighty-fifth street, New York.
225 tons, Flatbush Boys club, Bedford avenue, Brooklyn, N. Y.
200 tons, state highway bridge over Passaic river, in New Jersey.
200 tons, Great Atlantic & Pacific Tea Co. warehouse, Providence, R. I.; Long Construction Co., Boston, contractor.
200 tons, apartment at 3260 Sheridan road, Chicago.
200 tons, bridge in Coles County, Ill., for Illinois highway; St. Louis Structural Steel Co. low bidder.
130 tons, home economics building and hospital, Pullman college, Seattle; bids in.
125 tons, dock shed, Burlington, Iowa; steel to be bought through St. Paul contractor.
123 tons, office building, Weymouth, Mass.
110 tons, Science building, University of Southern California, Los Angeles; bids in.
100 tons, bridge, Johnson, Vt.; general contract to Ring Construction Co.
100 tons, bridge, North Royalston, Vt.; general contract to Albany Construction Co.
100 tons, garage, Southbridge, Mass.; Worcester & Southbridge Consolidated Street railway; S. X. Laliberte & Son, general contractors.
100 tons, hangar, Oakland, Calif.; bids in soon.
100 tons, building Torrance state hospital, Torrance, Westmoreland county, Pa.; bids close March 13.
100 tons, J. C. Penney Co. warehouse, St. Louis.
100 tons, bridge over Colorado river, Grand Canyon National park; bids taken Feb. 20 by United States bureau of public roads.
Unstated tonnage, postoffice, Utica, N. Y.
Unstated tonnage, chamber of commerce office building, Minneapolis; general contract to Pike & Cook Co.
Unstated tonnage, Market street viaduct, Shreveport, La.; bids in Feb. 28 by Howard Harrington & Ash, Kansas City, Mo.
Unstated tonnage, Lake Shore apartment hotel, Edgewater drive, Cleveland; Frank W. Ball, Cleveland, architect.
Unstated tonnage, Explorers' club, 644 Cathedral parkway, New York; C. E. Birge, architect.
Unstated tonnage, monastery and church, 178th street and Wexford terrace, Jamaica, Long Island, N. Y.; R. J. Reilly, architect.
Unstated tonnage, United States court house, Des Moines, Iowa; bids in March 20 by James A. Wetmore, acting supervising architect, treasury department, Washington.
Unstated tonnage, chemistry building and power house, Ohio State university, Columbus, O.; general contract to VanGundy-Beck Co.
Unstated tonnage, 63-story office and apartment building, for Reylex Corp., Forty-second street and Lexington avenue, New York; plans now being issued through Van Allen, architect.

Concrete Bars

Prospects Numerous but Awards Few—1000-Ton Job Let in New York

INQUIRIES for concrete reinforcing bars continue to appear in the market, but awards have not accelerated as rapidly as expected. March, it is anticipated, will find sales increasing rapidly as building and road construction programs get under way. Awards of the week include a 1000-ton project in New York. Prices are stiffening, in harmony with the remainder of the markets.

REINFORCING BAR PRICES, PAGE 582

Chicago, Feb. 28.—Announcement of the advance in finished steel prices for second quarter tends to stiffen billet reinforcing bar prices at a minimum of 2.30c, Chicago. Attractive tonnages for billet bars are failing to appear despite spirited building activity in the Chicago-Milwaukee district and the West and Northwest. Rail steel bar business is far above last year. Shipments of rail steel are the heaviest in a year and a half. Considerable work is on architects' boards. Rail steel reinforcing bars are showing strength at 1.85c to 1.95c.

Boston, Feb. 28.—The reinforcing steel market remains unchanged. A better tonnage than in the preceding two weeks developed out of a number of 10 to 50-ton orders. The only award of the week of 100 tons was for a new set of stores on Newbury street.

Pittsburgh, Feb. 28.—Although inquiries involving reinforcing concrete bars are numerous and prospects are bright for a heavy aggregate for the spring, bookings this past week were small. All 1.85c prices have disappeared and 1.90c is the minimum. The two largest inquiries involve 200 tons each for the Koppers building basements and a community hotel at Charleston, W. Va.

Buffalo, Feb. 28.—Better demand for reinforcing bars is in prospect, sellers predict. January and February sales have been slow, but unfavorable building weather is the cause. On lots shipped directly from steelworks, 2.05c, Lackawanna, is said to be the minimum. On lots which steelworks fill from their district stocks the price is 2.40c, Buffalo. More than 1000 tons of new inquiry is listed.

Cleveland, Feb. 28.—Concrete reinforcing bar demand continues to lag, but inquiries are sufficiently numerous to indicate better business in March. Included in awards of the week is the 600-ton Richman Bros. letting to Bourne-Fuller Co. New billet steel prices are firmer with 1.90c, Pittsburgh, or Cleveland mill, being quoted on some small new business. Weakness continues where attractive projects are under consideration. Rail steel bars are offered at 1.75c, mill. For delivery from mill or jobber stocks, prices range from 2.20c to 2.60c, Cleveland.

Awards Compared

	Tons
Awards this week	**6,505**
Awards last week	**3,625**
Awards two weeks ago	**10,445**
Awards this week in 1927	**3,590**
Average weekly awards, Feb.	**5,422**
Average weekly awards, 1928	**6,739**
Total awards to date, 1927	**30,943**
Total awards to date, 1928	**53,995**

CONTRACTS PLACED

1000 tons, Green industrial building, New York, to Jones & Laughlin Steel Corp., through Turner Construction Co.
750 tons, billet steel, Commonwealth Edison Co. building, Twenty-second and Throop streets, Chicago, to Concrete Steel Co.
700 tons, apartment, Argyle and Franklin streets, Los Angeles, to unstated company.
650 tons, Quaker Oats building addition, Cedar Rapids, Iowa, to Laclede Steel Co.
600 tons, building extensions for Richman Bros., Cleveland, through Sam W. Emerson Co., that city, general contractor, to Bourne-Fuller Co.
430 tons, building for Cleveland Packard Co., Cleveland, through Sam W. Emerson Co., that city, general contractor, to Bourne-Fuller Co.
300 tons, Campbell Soup Co. building, Camden, N. J., to Concrete Steel Co.
300 tons, hospital, Abington, Pa., to Truscon Steel Co.

275 tons, warehouse, Ninth and Castro streets, Oakland, Calif., to Badt-Falk Co.

250 tons, Broadway market and Armour building, Seattle, to Pacific Coast Steel Co.

250 tons, apartment house, Cambridge, Mass., to Concrete Steel Co.

250 tons, garage, Seattle, to Pacific Coast Steel Co.

200 tons, Blum store, Philadelphia, to Concrete Steel Co.

150 tons, Lindell Trust Co. building, St. Louis, to Missouri Rolling Mill Co.

100 tons, new stores, Newbury street, Boston, awarded to Parker Steel Co.

100 tons, building for West Park board, and other work, Chicago, to Concrete Engineering Co.

100 tons, billet steel, store addition to Sherman hotel, Chicago, to American System of Reinforcing.

100 tons, Chicago Women's Athletic club, Chicago, to Jones & Laughlin Steel Corp.

Unstated tonnage, power development for West Texas Utility Co., Abilene, Tex., to North Texas Iron & Steel Co.

CONTRACTS PENDING

5257 tons, drainage district No. 23, Los Angeles; bids in March 12.

2000 tons, grain elevators at Vancouver, New Westminster and Victoria, B. C., general contract awarded. Steel to be furnished by foreign interests.

1000 tons, Eleto warehouse, New York; general contract to White Construction Co.

663 tons, Big Dalton dam, Los Angeles; Blue Diamond Co. is low bidder.

600 tons, welded fabric, for Dansville-Hornell, N. Y., road; bids to be taken soon.

500 tons, involved in approximately 20 miles of concrete road work for state highway department, Harrisburg, Pa.; bids opened Feb. 28.

490 tons, New York anchorage and tower foundations of Hudson river bridge, New York; bids in March 5.

400 tons, bridgework for Arkansas state highway commission.

300 tons, reconstruction of municipal pier No. 34, North river, New York.

200 tons, basements for Koppers building, Pittsburgh; order to be placed March 1.

200 tons, community hotel, Charleston, W. Va.; bids in, early action expected.

200 tons, Trico Products Co., building addition, Buffalo; bids to be asked soon.

200 tons, bridge, Vicksburg, Miss.; U.G.I. Contracting Co., general contractor.

200 tons, warehouse for R. H. Macy & Co., New York; general contract to Barney-Ahlers Construction Co.

163 tons, Franklin avenue and Navigation boulevard underpass, Houston, Tex.; bids in March 7 by O. F. Holcombe, mayor.

150 tons, Memorial hospital, Cumberland, Md.; bids close March 6.

150 tons, bridge for the state highway department, Harrisburg, Pa., over Tioga river in Covington township, Tioga, Pa.; bids to be opened Feb. 29.

150 tons, north station, Boston.

100 tons, bar joists, Penn Manor apartment for E. C. Ball, Pittsburgh; bids being compiled.

100 tons, Morganza training school building; H. Miller & Sons, Pittsburgh, low bidder.

100 tons, building for Monongahela railroad, Brownsville, Pa.; bids close March 6.

100 tons, county bridge projects, Erie county, Buffalo.

100 tons, Temple university building, Philadelphia; Nelson Pedley Co. general contractor.

100 tons, highway, Cherry Hill, Pa., Charles H. Fry Construction Co., Erie Pa., contractor.

Unstated tonnage, United States postoffice, Utica, N. Y.; general contract to M. P. Severin.

Unstated tonnage, chemistry building and power house, Ohio State university, Columbus, O.; general contract to VanGundy-Beck Co.

A bill introduced in the house at Washington would bar the use of any but steel cars in the railway post-office service after Jan. 1, 1930.

Rails, Cars

Equipment Market Features Award of 2000 Cars and Inquiry for 4660

PLACING of an order for 2000 refrigerator cars by Pacific Fruit Express and inquiry by the St. Paul for 4660 cars featured a week of unusual activity in equipment. Rails also were more active, with the Rock Island placing 50,000 tons. Track fastenings orders in the Chicago district totaled 15,000 to 18,000 tons. Light rails remain dull.

RAILROAD TRACK MATERIAL PRICES, PAGE 582

Chicago, Feb. 28.—With the closing of the standard steel rail purchase of the Chicago, Rock Island & Pacific railroad and four or five small lots, mills booked about 75,000 tons the past week. The Rock Island placed 7500 tons with Inland Steel Co. and 42,500 tons with Illinois Steel Co. This inquiry had been before the market for some time. These orders are understood to be the last important tonnages of the primary rail buying for 1928. Secondary purchases will develop in the second and third quarters. Estimates are that the primary tonnage buying this year practically tallies with a year ago.

Track fastenings orders amount to 15,000 to 18,000 tons, and about 10,000 tons are on inquiry. Departments engaged in track fastenings production are nearing the capacity of the rail mills. Rail mill operations are close to 90 per cent.

The Chicago price of tie plates has been reduced $2 a ton, with the quotation now 2.15c.

The largest car order for some time was placed by the Pacific Fruit Express Co. for 2000 refrigerator cars. This order was divided equally between Pullman Car & Mfg. Corp. and Pacific Car & Foundry Co., subsidiary of American Car & Foundry Co. Half of these cars will be built in the Chicago district. Chicago, Milwaukee, St. Paul & Pacific is inquiring for 4660 cars to cost over $10,000,000.

New York, Feb. 28.—Car demand in the East is quiet, although sentiment is stimulated by the inquiry for 4660 cars by the St. Paul and the placing of 2000 cars by Pacific Fruit Express. Freight car awards for the month now closing will run over 10,000, compared with 3900 placed in January.

Pittsburgh, Feb. 28.—Backlogs of standard rails are keeping rail mills fully engaged and will continue to for two months. Light rail orders still are scattered, coming from operating coal companies usually buying a carload at a time. The price on new rails is $36. A recent decision by the interstate commerce commission sustaining a 20-cent reduction in freight rates to lake ports undoubtedly will bring tonnage coal orders to this territory which will enable coal companies to extend trackage.

Track accessory demand still is scattered. Prices are fairly firm.

Cleveland, Feb. 28.—Wheeling & Lake Erie railroad is inquiring for 12,000 tie plates, or about 40 tons.

CAR ORDERS PLACED

Booth & Flynn, 32 garbage cars, to Bethlehem Steel Co.

Chicago, Burlington & Quincy, 150 Hart ballast cars, to Rodger Ballast Car Co.

Conley Tank Car Co., 50 tank cars, to American Car & Foundry Co.

New York, Chicago & St. Louis, one coach, to Pullman Car & Mfg. Corp.

Pacific Fruit Express Co., 2000 refrigerator cars, 1000 each to Pullman Car & Mfg. Corp. and Pacific Car & Foundry Co.

St. Louis-San Francisco, six dump cars, to unnamed builder.

CAR ORDERS PENDING

Atchison, Topeka & Santa Fe, 150 to 200 underframes and superstructures; inquiry reported withdrawn.

Chicago, Milwaukee, St. Paul & Pacific, 4660 cars, comprising 2500 50-ton box cars, 1000 70-ton gondolas, 650 stock cars, 300 automobile cars, 200 ore cars, and 10 baggage cars.

Fruit Growers Express, 1200 underframes.

North American Corp., 200 poultry cars.

Paulista Railway of Brazil, seven sleeping cars; bids asked.

South Manchurian railway, 20 air dump cars.

St. Louis-San Francisco, 250 underframes.

Engineers Will Inspect Arc-Welded Bridge

The world's first arc-welded railroad bridge at Chicopee Falls, Mass., is nearing completion and arrangements have been made by the Westinghouse Electric & Mfg. Co., to enable engineers to view the finished work. On March 14 at 3 p. m., a special train will leave the Springfield, Mass., station for the bridge and after a stop for inspection, will return by 4:45 p. m. Within the limits of the accommodations provided, interested engineers will be welcome to join the party.

1400 Tons of Piling Up

Cleveland, Feb. 28.—Bates & Rogers Construction Co. will be placing 1400 tons of sheet piling for work in connection with the Cleveland Union Terminals project.

Wire

New Prices Firm but Sales Small—Shipments at Lower Prices Are Large

SHIPMENTS of wire and nails continue heavy, but mostly at lower prices than the present schedule. Sufficient business was placed before the advance to care for consumers' requirements for some time. Higher prices now quoted are firm but have not been applied on much tonnage. Nail shipments are slack for the moment.

WIRE PRICES, PAGE 582

Chicago, Feb. 28.—Demand for nails is less than for other wire products. This is partly because jobbers took heavy shipments of nails during January, and now are moving these to the trade. The price of nails is reported steady at $2.70 with less cutting than usual. Bright plain wire is reported steady at 2.55c, Chicago or western mill.

Worcester, Mass., Feb. 28.—Wire buying continues steady and at firm prices. Specifications continue heavy, holding mill production close to 70 per cent and also reducing stocks to a well balanced volume. Inquiry for next quarter has increased, but little real business has developed, although mills are holding firm to new prices.

New York, Feb. 28.—Orders for wire and nails are in less volume. On business previously booked, however, producers are estimated to be operating better than 60 per cent. Some new business has been taken at 2.50c, base, Pittsburgh, for wire and $2.65 for nails. So far business at these figures has not reached large proportions as previous contracts cover necessities.

Buffalo, Feb. 28.—The 2.50c base on common wire is being maintained. Sales of wire products in February have been exceptionally good, due partly, however, to seasonal demand for specialties and the high operation of welded fabric departments to stock up for spring shipment. Automobile companies have been large buyers and releases on orders have been satisfactory.

Pittsburgh, Feb. 28.—Wire and wire products makers have not sold much tonnage at 2.50c for wire and $2.65 for nails. Some less-carload orders have been taken on these bases, plus the regular l. c. l. differential. Shipments, however, are heavier against contracts accumulated some time ago at lower prices. The present quotations are entirely firm against new business. Operations are 65 to 70 per cent.

Detroit, Feb. 28.—Wire holds fairly firm at 2.50c, Cleveland but $2.65 for wire nails is shaded. Automotive users have taken heavier shipments in February than in January and are expected to further increase in March.

An examiner for the interstate commerce commission recommends that the freight rate on malleable castings from Milwaukee to Detroit be found inapplicable.

Bolts, Nuts, Rivets

Steady Specifications Keep Production at High Rate

NUT AND BOLT PRICES, PAGE 582

Chicago, Feb. 28.—Specifications for bolts, nuts and rivets continue fairly active from automotive and railroad users. Producers are dissatisfied with quotation on stove bolts and it is reported this price can be strengthened.

Pittsburgh, Feb. 28.—Steady specifications against nut, bolt and rivet contracts enable makers here to operate at 60 per cent or higher. Books not yet are opened for second quarter, but it is likely present nut and bolt price of 70 off for large quantities and 60 off for small will continue although there is a possibility of an advance from 2.75c on rivets.

Cleveland, Feb. 28.—Specifications for bolts and nuts show no signs of abating, February sales running ahead of January. Automotive interests continue to supply a large share of the current demand. Rivet buying is not active. Prices are firm.

Strip Steel

Larger Requirements of Consumers Bring Operations Higher

STRIP PRICES, PAGE 582

Chicago, Feb. 28.—Specifications for hot rolled strip steel are steady. Deliveries have been lengthened for some sizes of material. The quotation for hot rolled strip under 3 inches is 2.30c to 2.50c, Chicago; 3 to 6 inches, 2.20c to 2.30c; and 6 to 12 inches, 2.00c to 2.10c.

Pittsburgh, Feb. 28.—Strip steel specifications and shipments for February exceed January, which was heavier than December. Orders are from diversified consuming lines but have expanded greatly. Household hardware and appliance manufacturers are taking fairly large lots, and some mills here claim to be on an 80 per cent basis, while the average is nearer 70 per cent. Real progress is reported by several makers in booking for second quarter at the recently announced schedule of prices on hot strips, and at 3.15c on cold, or 2.90c for 3 tons or more.

Philadelphia, Feb. 28.—Strip is firmer. In some cases prices under 1.90c and 2.10c, Pittsburgh, on hot rolled have been withdrawn. These figures are now generally observed.

Cleveland, Feb. 28.—Strip steel specifications are unchanged from the rate of the previous week. Several mills continue to operate near practical capacity, but backlogs are disappearing. Buyers are contracting for second quarter at the recently established bases of 1.90c to 2.00c, Pittsburgh, for 6 to 12-inch, 2.00c to 2.20c for 3 to 6-inch, and 2.20c to 2.40c for under 3-inch, hot strip. Contracts compare favorably with those of the first quarter in tonnage. Cold strip is steady at 2.90c and 3.15c, Cleveland, without much forward buying.

Youngstown, O., Feb. 28.—Hot-rolled stripmakers are filled with mill orders, some units being scheduled several weeks ahead. Hot-rolled here holds at 1.90c, 2.10c and 2.20c, Pittsburgh; while cold-rolled is 3.15c for all widths under 12-inch in less than 3-ton lots, Pittsburgh and Cleveland.

Cold Finished Steel

Second Quarter Expected to Bring Higher Prices

COLD FINISHED PRICES, PAGE 582

Pittsburgh, Feb. 28.—Increased specifying furnishes the feature in cold finished bars. These are coming from automotive and allied lines. Agricultural implement business also keeps up remarkably well and jobbers are ordering a trifle more freely. Non-contract customers are asked to pay 2.30c. Books have not yet been opened for second quarter and some makers intimate a higher price will be asked, reflecting the recent advance in hot rolled bars. Cold bar finishers are operating 75 to 80 per cent.

Detroit, Feb. 28.—An increase over the present level of 2.30c, Pittsburgh, to match the recent advance in hot bars, is expected by some sellers. February shipments into this territory have been greater than those of January for some interests. March is expected to prove the best month of the quarter.

Cleveland, Feb. 28.—Specifications for cold finished steel bars are heavier than in preceding weeks. One company reports its specifications in the past two days the heaviest of the month. Releases from automatic screw machine products manufacturers and from other companies producing for automotive consumption have increased. On spot business 2.35c, Cleveland, is firm. No contracting has been done for second quarter, makers believing that when the books are opened 2.45c, Cleveland, will be the price.

Nonferrous Metals

Buying Continues Extremely Light and Prices All Through the List Are Weak—Users' Supplies Appear To Be Holding Out

Prices of the Week, Cents a Pound

	Copper, Electro delivered	Copper, Lake delivered	Copper, Casting refinery	Straits Tin, New York Spot	Straits Tin, April	Lead, New York	Lead, East St. Louis	Zinc, St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Feb. 22 Holiday.											
Feb. 23	14.05	14.25	13.75	51.37½	51.00	6.25	6.00	5.42½	23.90	10.62½	35.00
Feb. 24	14.05	14.25	13.75	51.87½	51.62½	6.25	6.00	5.42½	23.90	10.50	35.00
Feb. 27	14.00	14.20	13.75	52.37½	52.25	6.15	5.90	5.47½	23.90	10.50	35.00
Feb. 28	14.00	14.20	13.75	52.12½	51.87½	6.15	5.90	5.45	23.90	10.37½	35.00

NEW YORK, Feb. 28.—Prices of nonferrous metals have been weak nearly all through the list and buying has continued extremely light during the past week. Tin was somewhat of an exception, with some recovery in price but without much buying at the higher level.

Shipments on old orders continue of good size in nearly all metals and products, but supplies in users' hands are lasting longer than had been expected. Old orders are so nearly worked off that it appears new buying cannot long be postponed. Some prompt buying is being done but except in tin there is little else.

Copper—Copper is quoted 14.00c to 14.12½c, delivered, with most metal held at the higher figure but a plentiful supply in the hands of anxious sellers at the lower figure. A little metal for prompt shipment might be had for slightly less than 14.00c. Little business has been done at any prices. The export market activity also is unusually light.

Tin—After this metal had sold down to 51.00c for futures, and about one-fourth premium for spot, the market began to firm up several days ago. The decline in prices fully discounted the weak statistical position of supply in relation to demand, it is said. No great amount of confidence is shown in the higher prices, however. February statistics are expected to show an increase of more than 1000 tons in the visible supply for the world but with larger deliveries in this country than had been expected at the beginning of the month. Lately interest has been largely in distant futures metal.

Zinc—Prime western metal sold down to 5.45c, East St. Louis, and in fact a little prompt metal sold as low as 5.40c a few days ago. Then the market recovered slightly. The ore market on Saturday sold down to $34, later recovering to $35 a ton. The amount of buying lately has been extremely light but a little business has been done every day. A fair amount of metal has been sold for March and a little beyond that month. Weakness has been due in part to slack consumption but more largely to continued expansion of world output. Mid-February statistics show a better balance between demand and supplies in this country than in several months. High grade zinc though in increased production is well sold and steady on spot prices.

Lead—After the market had fallen to 6.25c, New York, a week ago, it appeared to become more stable, but on Monday the trade was somewhat surprised with a further cut to 6.15c, New York, and 5.90c, East St. Louis. A fair amount of prompt business has been done.

Aluminum—Business in this metal has been mostly for prompt shipment and prices are steady. Consumption is a little larger than some time ago.—*Daily Metal Trade.*

Mill Products

Base prices cents per pound f.o.b. mill

SHEETS	
Yellow brass (high)	18.75
Copper, hot rolled	22.75
Lead, full sheets (cut ¼c more)	9.75
Zinc (100-pound base)	9.50
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.50
SEAMLESS TUBES	
Yellow brass (high)	23.62½
Copper	24.50
RODS	
Yellow brass (high, free turning)	16.50
Naval brass	19.25
WIRE	
Copper, small lots	15.62½
Yellow brass (high)	19.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25 to 9.50
Chicago	9.25 to 9.50
Cleveland	9.50 to 10.00
HEAVY YELLOW BRASS	
Chicago	7.50
Cleveland	7.25 to 7.50
ZINC	
New York	3.50
Cleveland	3.25
HEAVY COPPER AND WIRE	
New York	11.50 to 11.75
Boston	10.75 to 11.25
Chicago	10.50 to 11.00
Cleveland	11.50 to 11.75
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.50
LIGHT COPPER	
New York	10.00 to 10.25
Chicago	10.00
Cleveland	10.00 to 10.25
LIGHT BRASS	
Boston	6.00 to 6.50
Chicago	6.50
Cleveland	5.50 to 5.75
ALUMINUM	
Clippings, Cleveland	17.50
Borings, Cleveland	9.50
Cast, Cleveland	13.00
Cast, Boston	12.00 to 12.50

Secondary Metals

Remelt Aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	12.25 to 12.50

Coke By-Products

Toluol Buying Good—Solvent Naphtha Easy—Sulphate in Demand

New York, Feb. 28.—Buying of toluol continues to improve, receiving particular impetus from expanding automotive operations. Prices are unchanged. Pure and 90 per cent benzols are moving well, with the market holding at 23 cents, works in tanks, and 28 cents, works in drums. Solvent naphtha appears the least active of the group, with prices easy at 30 to 35 cents, for material in tanks, and even lower prices are reported in some instances. Commercial xylol is firm. Phenol is selling in tank lots at 19 to 20 cents. Sulphate of ammonia is moving briskly, with a substantial volume of spot business. Export buying is noted in fair quantity with little offered for delivery before May. Naphthalene is steady. Demand is showing increasing activity as the spring cleaning season approaches.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contracts
Pure benzol	$0.23	.....
90 per cent benzol	0.23	.....
Toluol	0.35	.....
Solvent naphtha	0.30 to 0.35	.....
Commercial xylol	0.36	.....
Phenol	0.19 to 0.20	.....

Per Pound at Producers' Plants

Naphthalene flakes	0.05 to 0.05½
Naphthalene balls	0.06 to 0.06½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.35

Quicksilver $122 to $123

New York, Feb. 28.—Quicksilver is in a steady market at $122 to $123 a flask.

The federal geological survey has issued a bulletin describing a bed of manganese ore in southern Idaho deposited in the glacial period and later covered by 100 feet of silt.

Warehouse

Quietness in Market Follows Period of Activity—Firmness in Prices Spreads but Advances Few—Sellers Anticipate Good March

EXCEPT for a few districts the iron and steel warehouse market of the week showed a slowing of sales activity. This lull is regarded as temporary and a heavy buying movement is expected to carry March to high totals, that month usually being one of the best of the year. Firmer prices are spreading although actual announced prices are few.

While trading in the New York metropolitan warehouse market is far from active, business is better than in the corresponding period a month ago, and in the experience of some jobbers the month as a whole is proving better than January. Sellers generally look for a substantial improvement in March, usually one of the best months in the year. Prices are unchanged and are deriving strength from the upward tendency at the mills.

Inclement weather and the Washington's birthday holiday had a tendency temporarily to slow down business of St. Louis warehouses. There have been some requests to delay shipments, and specifications generally are less active. A revival in activity is looked for in the near future.

Boston warehouse demand is unchanged with demand limited.

February business of Detroit warehouses has not quite equaled last February. The number of orders continue high but their aggregate is not satisfactory. Railroads continue good buyers of bars and plates. The building industry is expected to pick up in March. The advances in mill prices on heavy finished steel are not expected to be reflected by the warehouses.

The coldest weather of the year slowed up warehouse sales at Buffalo the past week, with prospect of continued subnormal temperatures and business during the present week. Sellers look for activity to take a pronounced upward turn with the arrival of warmer weather.

Despite a slight falling off in demand within the past few days, warehouse sales in the Cleveland district in February generally will exceed those of January. Better business is anticipated in March, when spring needs accelerate certain industries now inactive. The number of orders continues in the same volume as previous weeks. Jobbers are finding no difficulty in obtaining full quoted levels.

The firmer tone noted in the Philadelphia jobbing market continues pronounced. Most jobbers now are observing the differentials on steel bars, not only locally but also for delivery in New Jersey south of Trenton. In some quarters advances in warehouse quotations are being considered for application soon.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	2.60c to 3.31c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.40c
New York	3.24c
Philadelphia	2.40c to 2.90c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.06c

IRON BARS

Baltimore	2.60c to 3.31c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York	2.80c to 3.24c
Philadelphia	2.40c to 2.90c
St. Louis	3.15c
Tulsa	3.75c to 4.06c

REINFORCING BARS

Baltimore	2.60c to 3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.20c
Detroit	3.00c
Ft. Worth	3.50c
Houston	3.00c
*Los Angeles	3.05c
**Los Angeles	3.30c
New York	2.95c
Philadelphia	2.30c to 2.80c
Pittsburgh	2.90c to 3.175c
*San Francisco	2.85c
**San Francisco	3.10c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

*Carload. **Less carload.

STRUCTURAL SHAPES

Baltimore	2.60c to 3.41c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.25c
Houston	3.25c
Los Angeles	3.40c
New York	3.34c
Philadelphia	2.40c to 2.80c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

PLATES

Baltimore	2.60c to 3.41c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.40c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.40c to 2.80c
Phila., 3/16-in.	2.60c to 3.00c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

No. 10 BLUE ANNEALED SHEETS

Baltimore	3.10c to 3.66c
Boston, 3/16-in.	3.915c
Buffalo	3.70c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.50c
Ft. Worth	4.70c
Houston	3.90c
Los Angeles	3.85c
New York	3.79c to 3.89c
Portland	4.00c
Philadelphia	3.15c
*Pittsburgh	3.10c
San Francisco	3.75c
Seattle	4.00c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.20c to 4.56c

*Price on 25 or more sheets.

No. 24 BLACK SHEETS

Baltimore	3.60c to 4.30c
Boston	5.00c
Buffalo	4.20c
Chicago	3.95c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	4.10c
Ft. Worth	4.70c
Los Angeles	5.10c
New York	4.10c
Philadelphia	4.15c
Pittsburgh†	3.75c
Portland	4.90c
San Francisco	4.95c
Seattle	5.00c
St. Louis	4.45c
St. Paul	3.95c
Tulsa	4.75c

†Price on 10 to 24 bundles.

No 24 GALVANIZED SHEETS

Baltimore	4.30c to 5.45c
Boston	5.85c
Buffalo	5.05c
Chicago	4.80c
Cincinnati	4.90c
Cleveland	4.60c
Detroit	4.90c
Ft. Worth	5.75c
Houston	5.30c
Los Angeles	5.30c
New York	4.70c
Philadelphia	5.00c
Pittsburgh†	4.60c
Portland	5.65c
San Francisco	5.50c
Seattle	5.75c
St. Louis	5.25c
St. Paul	4.90c
Tulsa	5.55c

†Price on 10 to 24 bundles.

BANDS

Baltimore	3.25c to 4.06c
Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.65c
Ft. Worth	4.40c
Houston	3.65c
Los Angeles	4.25c
New York	3.99c
Philadelphia	3.25c
Pittsburgh	3.60c
Portland	4.00c
San Francisco	4.00c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Baltimore	4.16c
Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cincinnati	4.40c
Cleveland	3.65c
Detroit	4.15c
New York	4.49c
Philadelphia	3.50c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds, hexagons	Flats squares
Baltimore	3.25c	3.75c
Boston	3.45c	3.95c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	.....
New York	3.40c	3.90c
Philadelphia	3.35c	3.85c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	4.25c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500-lb. lots	6.00c
Buffalo	5.85c
Chicago*	6.10c
Cincinnati	7.15c
Cleveland*	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia	5.00c†

*Net base, straightening, cutting, boxing one ton or more.

†Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL
New York duty paid

Hollow drill steel	14.00c
Iron bars, rounds	6.25c
Flats and Squares	
Baltimore, New York, Phila.	6.60c

Coast Selling Active

Tonnages in Some Products Ahead of Last Year—
Building Activity Is Marked

SAN FRANCISCO, Feb. 25.—(*By Air Mail*)—Considerable interest continues to hinge around the steel conference held at Del Monte last week and the Northwestern steel conference, the first one of its kind, about to be held at Tacoma. Larger markets, better business practices and more equitable prices are looked for.

The largest award this week was the placing of 1926 tons of cast iron pipe by Los Angeles with an eastern and a western producer. Construction activity on the coast is being well sustained and the outlook for this year's business is bright.

Pig Iron and Coke

Demand for foundry pig iron and coke was limited this week and as far as could be ascertained few tonnages were placed. Inquiries, also, involved small lots for prompt shipment. Prices continue unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00
*Dutch	24.50

*C.i.f. duty paid.

Bars, Plates and Shapes

Awards of concrete bars this week were the heaviest in over a month and aggregated 1707 tons, bringing the total for the first eight weeks of the year to 15,831 tons, compared with 9780 tons for the corresponding period in 1928. Bids will be opened March 12 on over 5200 tons for a drainage district project at Los Angeles. The Blue Diamond Co. was low bidder on 663 tons for the Big Dalton dam at Los Angeles. Pending business now totals over 14,000 tons.

Only one award of importance was noted in the plate market. The Western Pacific railroad placed 170 tons of universal plates for construction of 800 box cars. This material went to unnamed eastern mills. To date this year awards aggregate 2539 tons, compared with 7990 tons for the same period last year. Bids on the 2000-ton penstock for Seattle were returned unopened and new specifications will be prepared. The Standard Oil Co., San Francisco, rejected all bids on its inquiry for a deisel oil tanker involving 3500 tons of plates and 1500 tons of shapes. Important pending business involves 900 tons for a pipe line at Tacoma and 650 tons for a penstock at Milton, Oreg. The navy department will open bids Feb. 28 for furnishing western yards with 500 tons of material. No action has been taken on the 1300-ton inquiry for a penstock for the Southern California Edison Co. Prices are firm at 2.30c c.i.f.

Structural shape demand continues more active than in other products and awards this week totaled close to 1200 tons, bringing the aggregate for the year to 25,175 tons as compared with 40,042 tons for the same period in 1927. McClintic-Marshall Co. Central works booked three projects totaling 395 tons. The largest new inquiry of the week involves 480 tons for the addition to the Heinz plant at Berkeley, Austin Co. securing the general contract. Pending business exceeds 19,000 tons. Plain material remains firm at 2.35c c.i.f.

Other Finished Material

Demand for cast iron pipe continues active and several important new inquiries developed during the week. Awards this week aggregated 2317 tons bringing the total for the first eight weeks of the year to 12,121 tons, compared with 16,852 tons for the corresponding period last year. The largest pending business involves 3100 tons for Southgate, Calif., bids on which were opened this week. Santa Barbara, Calif., has come into the market for 663 tons of 6 to 20-inch pipe.

Little of importance was noted in the market for standard tubular and oil country goods. Several pipe line projects are contemplated requiring several thousand tons of line pipe. An unconfirmed rumor developed this week that the Standard Oil Co. would shortly be in the market for 22,000 tons of line pipe.

Northwest Mills

Are Busy and Market Is Active and Competitive

SEATTLE, Feb. 22.—Award of 1500 tons of structurals to the Wallace Bridge & Structural Steel Co. for the proposed 15-story office building at Third and Union streets, Seattle, by the Stimson Realty Co., featured the week's steel market. Other awards involve 250 tons of reinforcing steel and about 1200 tons of cast iron pipe by Vancouver, B. C.

Taken as a whole, the iron and steel market in the Pacific Northwest is noticeably firmer and indications are for a strong buying movement. Numerous large projects are pending involving considerable tonnages.

Bars, Plates and Shapes

Steel mills are operating steadily. Specifications are coming in more freely and while business is still mostly in carload lots some large tonnages are pending. While mill prices of merchant bars continue unchanged at 2.35c, there has been a strengthening in reinforcing prices. This material has been weak for some time, due to competition between the two interests in the Northwest. However, better prices now obtain although the level for each contract is set by competitive bidding. Awards this week include 250 tons to the Pacific Coast Steel Co., involving 200 tons in the new Broadway market building, and 50 tons in a new office and warehouse for Armour Packing Co. General contracts have been let for grain elevators at Victoria and New Westminster, B. C., involving about 2000 tons of reinforcing material which it is understood will be imported.

Seattle has returned unopened bids submitted for pipe line No. 4 of the Cedar river hydroelectric project. New plans and specifications will be compiled. The improvement is estimated to cost $447,000 and to require 2050 tons of plates. Bids are under consideration at Milton, Ore., for a pipe and penstock job involving 650 tons of plates. Mill prices of plates are firm and steady at 2.30c.

Jobbers report no change. Volume of trade is about normal but increased buying is expected shortly.

Vancouver, B. C., city council has awarded contracts for about 1175 tons of cast iron pipe. Leith, Murray & Co., 510 Hastings St., W., will furnish United States pipe, the quantity being about 600 tons. To Grinnell Co. of Canada Ltd., went the contract for about 575 tons of Belgian pipe. Everett, Wash., is planning to replace 5000 feet of wood water main with steel or cast iron pipe.

Steel mills are receiving ample supplies of steel scrap, prices remaining steady at $10 and $11, gross, according to quality. Exporters are not active in Seattle, finding it difficult to bid against local mills. Buyers for Japanese interests are picking up supplies for export at Vancouver, B. C., and Portland, Oreg., where they can compete with mills in view of the freight of $2.80 from those points and an additional handicap of 75 cent duty on British Columbia scrap. Cast iron scrap is now firm at $14.50 to $14.75 gross, local foundries not being actively interested except for small tonnages.

Again Ask Rise in Cast Pipe Duty

Washington, Feb. 28.—A second application has just been filed with the tariff commission by a domestic manufacturer asking for increased duty on cast iron pipe. An application was filed sometime ago with the commission asking similar action and a preliminary investigation is now being made which has not yet been presented to the commission. The largest imports of cast iron pipe are from France.

Plan Foundry Exhibit at Chicago Fair

Officials of the Chicago Foundrymen's club already have started organizing for an elaborate exhibition of foundry technique for the Chicago Centennial World's Fair in 1933. The Chicago foundrymen are sponsoring this exhibit, and it is understood financial aid is forthcoming for a large exhibit depicting history and development of the foundry industry from earliest times.

The Chicago club also has arranged for a special train to take members to the Philadelphia convention of the American Foundrymen's association in May. A side-trip to Washington will be included. C. E. Hoyt, a member of the club and executive secretary of the American Foundrymen's association, will lay a wreath on the tomb of the Unknown Soldier in Arlington cemetery in behalf of the Chicago club.

American Tools in High Regard in Europe

Because of their uniform high quality, American-made tools have attained a pre-eminent position in the markets of continental Europe, a trade bulletin issued by the iron and steel division of the department of commerce states. A wide sale, however, is prevented because the average European workman cannot afford to purchase an expensive product.

American exports of hand tools in 1926 declined from the previous year's figures. It was explained that the European manufacturers are making a concentrated effort to market their tools at the lowest possible prices, making the sale of American quality products difficult.

France is at the present time the chief buyer of American hand tools, according to the report, with Italy, Spain and Sweden following in order. Precision tools, including taps, dies, reamers, etc., represent the most important items in American exports.

Bureau Prints Paper on Chromium Alloys

An investigation on the thermal expansion of low carbon iron chromium alloys of the "stainless steel" type has been completed by the Bureau of Standards, Washington. No data on this subject were available. These alloys are being used to an increasing extent for various purposes, say officials of the bureau, such as parts of steam turbines, devices for handling acids, and in the manufacture of other articles that must resist corrosion.

A scientific paper which gives results on the expansion of stainless iron for various temperatures is now being printed. Critical regions were located on some samples of stainless iron. This material expands about 17 per cent less than pure iron, the bureau says.

1927 Is Banner Year for German Machinery

Although not equaling the high mark of 1913, it is believed that 1927 was one of the greatest production years in history of German machinery industry and trade, according to a bulletin issued by the industrial machinery division, department of commerce, Washington. Good labor at low wages and activities of organization are given as two of the reasons for the recovery of the industry.

The past year, a record-breaker for German machinery imports, is a reflection of Germany's strides in modernization. The United States has been furnishing a considerable part of these increased German imports. The value of German machinery imports in 1927 was 30 per cent over the record in 1913.

Simplification and standardization are being practiced with enthusiasm. Many companies, in 1925 and 1926 entered into mutual working agreements for either production or sale and 29 different German companies merged into eight larger corporations. The last two years have shown progress in negotiation of foreign trade treaties in which the German machinery industry has taken a large part for the protection of their interests.

Bigger, Better Leipzig Fair Promised

New York, Feb. 28.—More than 2000 buyers and exhibitors from all parts of the United States will take part in the spring fair, which is to be held March 4 to 10, at Leipzig, Germany, according to the American office of the Leipzig Trade Fair Inc., 630 Fifth avenue, New York. Fully 10,000 exhibits of the latest industrial products of more than twenty countries will be on view. The group of 100 special exhibition buildings housing the fair will be increased this year and many new features introduced. A new hall twice the size of the Madison Square Garden, New York, has been built to house the automobile exhibit.

Elected as Directors

J. T. Whitehead, president, Whitehead & Kales Co., Detroit, and Clyde MacCornack, general manager and chief engineer, Phoenix Bridge Co., Phoenixville, Pa., have been elected to serve as members of the board of directors of the American Institute of Steel Construction. Their terms will expire in the fall of 1928.

Stamm Named Sales Head

Mansfield, O., Feb. 28.—Charles H. Stamm, associated with the Mansfield Sheet & Tin Plate Co. for the past 22 years, has been made sales manager of the newly-formed Empire Steel Corp.

Pig Iron Shipments Heavy

(*Concluded from Page* 583)

eastern Michigan, one sale of 500 tons having been made there. Several small lots of silvery have been placed at the Jackson county schedules and it is reported a small tonnage was sold slightly under the market. Charcoal iron in small-lot sales holds at $24, furnace. The base price of $18.50, Chicago furnace, for foundry and malleable, is holding.

Cincinnati, Feb. 28.—Pig iron sales are small. Lake furnaces still are competing in this district. Southern iron continues $16, base, furnace, while northern iron is $17 to $17.50. The Indiana reformatory, at Pendleton, Ind., is inquiring for 150 tons of 2.75 per cent silicon southern iron. An Ohio consumer placed 300 tons of silvery iron.

St. Louis, Feb. 28.—Demand for pig iron holds up fairly well, sales reported in the past week totaling approximately 6000 tons, all of foundry and malleable grades. A small increase in the melt is noted, and indications point to a maintenance of the present rate or a little better in the next month or six weeks. The largest inquiry pending is for 2000 tons of foundry iron for second quarter for a melter in this district. A radiator manufacturer purchased 2500 tons, and 1000 tons was placed by a St. Louis car builder. A glass manufacturer purchased 500 tons. Prices are firm.

Birmingham, Ala., Feb. 28.—Pig iron is being sold for second quarter. The probable output in the first quarter has been covered. The price continues $16, base, Birmingham.

Philadelphia, Feb. 28.—A sale of 3000 tons and two of 1000 tons each featured pig iron this week. This business was at $20, base, eastern Pennsylvania furnace. Otherwise sales have been small. Producers report more active specifying against contracts. Eastern makers sold 4000 tons of copper free low phosphorus, now quoted at $23.50, eastern Pennsylvania furnace. English low phos continues a factor at $23 to $23.50, duty paid, tidewater.

February Iron Gains Sharply

Total Pig Production Is 2,884,674 Gross Tons and Daily Rate Averages 99,471 Tons—Active Stacks at Close of Month Number 186—Steel Units Gain, Merchant Decline

FULL effect of the 17 blast furnaces which resumed operations since the first of the year was reflected in the February production of coke pig iron. According to an estimate compiled by IRON TRADE REVIEW from reports received principally by telegraph, iron made in February totaled 2,884,674 gross tons and was the second consecutive month to show a gain. During the month, active stacks increased from 184 to 186. In January 15 furnaces had resumed.

Compared with the 2,855,515 gross tons made in January, the February output registered an increase of 29,159 tons. This showing was made in spite of the fact that February had only 29 days, against 31 in March. Average daily production was 99,471 tons, compared with 92,113 tons in the month before, the increase being 7358 tons, or 7.9 per cent. In February, 1927, iron was made at the rate of 105,021 tons per day. Average daily production for the first two months of 1928 averaged 95,669 tons, while the rate for the corresponding period of 1927 was 102,406 tons per day.

MONTHLY PRODUCTION

	1928	1927	1926	1925
Jan.	2,855,515	3,101,346	3,319,789	3,372,207
Feb.	2,884,674	2,940,604	2,923,850	3,214,067
Total 2 mos.	5,740,189	6,041,950	6,243,639	6,586,274
Mar.	.....	3,482,107	3,458,171	3,571,422
April	.....	3,424,377	3,438,805	3,211,235
May	.....	3,391,067	3,477,820	2,933,907
June	.....	3,089,726	3,232,478	2,679,045
July	.....	2,954,625	3,224,663	2,665,262
Aug.	.....	2,950,674	3,200,723	2,707,171
Sept.	.....	2,782,500	3,163,269	2,725,885
Oct.	.....	2,812,015	3,334,206	3,017,889
Nov.	.....	2,661,863	3,237,992	3,023,257
Dec.	.....	2,698,208	3,089,175	3,249,057
Total,	.....	36,289,112	39,100,941	36,370,404

On the last day of February, 186 blast furnaces were in operation, against 184 on Jan. 31. Of the merchant class, none was blown in and 4 were blown out; of the nonmerchant or steelworks class, 7 were blown in and 1 blown out.

In the accompanying table, IRON TRADE REVIEW presents a new index of ironmaking operations. Based upon a coke pig iron capacity of 51,379,400 gross tons as of Dec. 31, 1926, as compiled by the American Iron and Steel institute, the February production represented 70.8 per cent of capacity. Operations in January were at the rate of 65.4 per cent, while in February one year ago they were 74.7 per cent.

Rate of Operations

(Relation of Production to Capacity)

	1928*	1927*
February	70.8	74.7
January	65.4	71.2
December	.....	61.8
November	.....	63.0
October	.....	64.5
September	.....	65.9
August	.....	67.6
July	.....	67.7
June	.....	73.2
May	.....	77.7
April	.....	81.2
March	.....	79.8

***Based on coke pig iron capacity of 51,379,400 gross tons as of Dec. 31, 1926, as compiled by American Iron and Steel institute.**

Stocks blown in during the month were: In Ohio: Mingo No. 4, Carnegie Steel Co. In Pennsylvania: Edgar Thomson K and New Castle No. 4, Carnegie Steel Co.; one Midland, Pittsburgh Crucible Steel Co. In Alabama: Bessemer No. 2, Tennessee Coal, Iron & Railroad Co. In Indiana: Gary No. 1, Illinois Steel Co. In Illinois: South Works No. 7, Illinois Steel Co.

Stacks blown out were: In Ohio: River No. 2, Corrigan-McKinney Steel Co.; Belfont, Belfont Steel & Wire Co. In Pennsylvania: Carrie No. 1, Carnegie Steel Co.; Stewart, Stewart Furnace Co. In Alabama: City No. 1, Sloss-Sheffield Steel & Iron Co.

J. W. Collins, foundry superintendent, United States Aluminum Co., Detroit, addressed the members of the Quad-City Foundrymen's association on the subject of "Aluminum Castings" at a meeting held in Moline, Ill., Feb. 20.

FEBRUARY PIG IRON

	No. in blast last day of month Feb.	Jan.	—Totals— Feb.	Jan.
Ohio	40	41	655,812	660,076
Pennsylvania	59	58	895,702	852,319
Alabama	17	17	198,094	224,272
New York	14	14	192,490	189,260
Illinois	19	18	340,522	330,086
Colorado	3	3		
Indiana	16	15		
Maryland	5	5	413,540	405,440
Virginia	1	1		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	1	1		
Tennessee	1	1	82,617	78,375
Utah	1	1		
West Virginia	2	2		
Michigan	4	4		
Minnesota	2	2		
Missouri	0	0	80,158	83,177
New Jersey	0	0		
Texas	0	0		
Spiegel and ferro —all states	....	....	25,739	32,510
Total	186	184	2,884,674	2,855,515

January Employment Off

Washington, Feb. 28.—Employment in manufacturing industries decreased 1.1 per cent in January compared with December and pay roll totals decreased 3.9 per cent, according to the bureau of labor statistics, department of labor. Both employment and pay roll totals were a little more than 5½ per cent lower in January of this year compared with January of last year. One of the outstanding increases in employment in January as compared with December was 8.6 per cent in the automobile industry. The iron and steel industry reported a slight increase in employment.

AVERAGE DAILY PRODUCTION

	1928	1927	1926	1925	1924
Jan.	92,113	100,043	107,039	108,781	97,273
Feb.	99,471	105,021	104,423	114,788	105,987
Mar.	.....	112,326	111,554	115,207	111,787
Apr.	.....	114,146	114,627	107,041	107,537
May	.....	109,388	112,187	94,642	84,515
June	.....	102,991	107,749	89,301	67,427
July	.....	95,311	104,021	85,976	57,531
Aug.	.....	95,183	103,249	87,328	60,741
Sept.	.....	92,750	105,442	90,862	68,454
Oct.	.....	90,710	107,555	97,351	79,419
Nov.	.....	88,728	107,933	100,775	83,832
Dec.	.....	87,039	99,651	104,808	95,367
Ave.	95,669	99,422	107,126	99,645	84,908

Furniture Orders Rise

Washington, Feb. 28.—New orders for steel furniture in January made a comfortable gain, according to the department of commerce. Comparisons follow:

	Business Group		Shelving	
1926	Orders received	Shipments	Orders received	Shipments
Total	**31,393,171**	**31,429,140**	**7,840,351**	**7,837,017**
1927				
Jan.	**2,886,815**	**2,730,714**	**876,677**	**555,296**
Feb.	2,771,477	2,686,419	657,833	607,622
March	**3,021,915**	**3,080,931**	**689,964**	**690,783**
April	**2,750,877**	**2,849,536**	**621,888**	**677,745**
May	2,381,369	2,528,672	686,144	585,397
June	**2,369,244**	**2,519,512**	**638,485**	**657,927**
July	**2,091,804**	**2,040,209**	**534,592**	**564,744**
Aug.	**2,381,889**	**2,474,854**	**592,353**	**604,107**
Sept.	**2,367,857**	**2,218,602**	**607,905**	**531,154**
Oct.	2,410,552	2,379,557	551,259	619,293
Nov.	2,476,230	2,856,181	574,763	590,764
Dec.	2,850,314	2,740,602	619,276	577,910
Total	30,760,343	31,105,789	7,351,122	7,264,282
1928				
Jan.	3,248,165	2,712,663	768,748	680,264

Engineers in Largest Meeting

American Institute of Mining and Metallurgical Engineers Have Over 1400 at Annual Meeting

Cast Iron and Special Steels Share Attention—Hoover Is Presented Saunders Medal—New Officers Elected

THE close relationship between special steels and industrial development was emphasized at two of the principal sessions of the annual meeting of the American Institute of Mining and Metallurgical Engineers, held at the Engineering Societies building, New York, Feb. 20-23. With a registration of over 1400 the convention took its place as the largest in the history of the institute.

Simultaneous technical sessions were held on each of the four days. The iron and steel division discussed alloys, special steels, blast furnaces, metallurgy and held many committee meetings. The institute of metals division held four regular sessions and the petroleum division and the coal and coal products division held important meetings, at which industrial problems were discussed.

More than 1200 attended the annual banquet on Tuesday evening, upon which occasion Herbert Hoover was presented with the Saunders medal for achievement in mining. George Otis Smith, director, geological survey, Washington, was elected president of the institute.

High-Grade Steel Indispensable to Aircraft

THE importance of steel to the aircraft industry scarcely can be exaggerated, according to E. A. Richardson, Bethlehem, Pa., who presented a paper on steel for aircraft construction. The need for saving weight in a commercial airplane is so great that the expense of the material used is relatively unimportant, according to the speaker. Thus, it has been possible to go to great extent in the development of high-grade alloy steels. The most important single item is the power plant which varies from half the weight of the pay load to 40 per cent heavier. In modern practice the engine weight varies from 1½ pounds to 2½ pounds per horsepower.

Mr. Richardson's paper gave a detailed outline of the various parts which go to make up a modern airplane and described the nature of the material used for these parts. He then described the many alloy steels which have been tested. Molybdenum alloys are extensively used, the advantage of this material being found chiefly in the manufacturing processes.

A detailed description of the German method of manufacturing rails was presented by C. W. Gennet Jr., manager rail department, Robert W. Hunt & Co., Chicago, Ill. This paper was a description of the manufacture, testing and inspection of rails made for the Boston & Maine railroad by the Rheinhausen Works of Messrs. Fried Krupp. One of the chief distinguishing features in German practice is the absence of hot cambering the rail during the rolling process.

Straightening of rails at the Krupp works is done on a roller straightening machine which consists of three top rolls and two bottom rolls, all power driven. All of these rails are movable and their position is determined by the operator. The whole machine is heavily housed. The rails, cooled on the hot beds, frequently have a sweep amounting to as much as 12 inches. Despite this, the rails are successfully straightened in the roller straightener. It requires approximately 15 seconds for a 39-foot rail to go through the straightening process.

Officers Elected

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

President

GEORGE OTIS SMITH
Director, United States Geological Survey, Washington

Vice Presidents

BIRCH O. MAHAFFEY*
Vice president, Silurian Oil Co., St. Louis

CARL A. MEISSNER*
United States Steel Corp., New York

F. JULIUS FOHS*
Consulting oil geologist, New York

GEORGE D. BARRON
Consulting engineer, Rye, N. Y.

WILLIAM H. BASSETT
Metallurgist, American Brass Co., Waterbury, Conn.

Secretary

H. FOSTER BAIN

Treasurer

KARL EILERS
New York

*Re-elected.

Discussion of this paper centered around the relative effects on steel structure of the American method of straightening and the German roller straightening machine. It was the general consensus of opinion that straightening methods at present are crude and have not kept pace with other processes in rail manufacture. J. H. Nead, chief metallurgist, American Rolling Mill Co., Middletown, O., gave some of the objections to the adoption of roller straighteners in rail manufacture. These may be listed as follows: 1.—High initial cost of equipment; 2.—changes required in rail finishing layout; 3.—the necessity of using some other method for handling end kinks; 4.—the possibility that pressure of rails may cover up the appearance of defects in the rail surface.

Another point which caused considerable controversy in the discussion was the bottom pouring of ingots used for the German rails. Mr. Gennet had made the statement that this caused less pipes than with top pouring. Several speakers familiar with the German practice said they felt the reduction in piping effect was due rather to the slower pouring than to bottom pouring. One engineer stated that the German practice was to pour at a speed of about one-fifth of that used in American practice. Mr. Nead said that the German ingots were poured with a riser head of about 1 foot above the top of the mold.

The recent changes in types and qualities of steel used by railroads

were described in much detail by Robert Job, vice president, Milton Hershey Co. Ltd., Montreal, Que. In the case of axles, he showed that there has been an increase of over 65 per cent in the elastic limit since the first wrought iron construction. The ultimate strength of steel in good practice today is about 80,000 pounds per square inch. He told about the use of rolled nickel steel plate for boiler construction on the Canadian Pacific railroad. This makes possible a thinner plate with decreased weight, but at the same time with increased resistance to stress.

A still later development, according to the speaker, is the use by the Canadian National railways of silicon steel. This steel has a higher carbon and manganese content than usual, with a minimum of 0.18 per cent silicon, which is about the same proportion of silicon used in good grades of steel for many years. This so-called silicon steel has excellent physical properties. Its elastic limit and tensile strength closely approach those of the more expensive nickel-chromium steels or steels containing vanadium.

The William Lawrence Saunders medal was given to Herbert Hoover for his achievements in mining.

In a paper illustrated with moving pictures and lantern slides, Lloyd Jones, manager, Salem division, E. W. Bliss Co., Salem, O., described backed-up mills for continuous rolling. The discussion of this paper covered many technical features in roll construction.

D. Eppelsheimer, Middletown, O., said it was advisable to use rolls with minimum diameter. He said the strip industry is essentially an American development, just as the sheet industry is associated with Saxony. He described new mills which are now rolling strips 42 inches wide, which have developed from the first 4-high wide mills.

The Henry M. Howe memorial lecture was presented by Henry D. Hibbard on the significance of steel analysis. He said that good, bad and indifferent steels may have essentially the same analysis. He showed a table which started with Swedish iron, giving a tensile strength of 45,000 pounds per square inch. When carbon is added to this material a tensile strength of 150,000 pounds can be obtained. By heat treatment, tensile strengths of 300,000 pounds have been secured and when in addition to this, cold working is added, tensile strengths as high as 500,000 pounds per square inch have been obtained.

Seek Means To Measure Quality of Pig Iron

WEDNESDAY, for the iron and steel group, was given over to an all day session on blast furnace problems.

W. R. Phibbs, general superintendent, Columbia Steel Corp., Provo, Utah, described in considerable detail, the operation of a blast furnace at Ironton, Utah. J. P. Dovel, vice president, Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., continued this same line of discussion with a description of improvements in blast furnace construction. Simultaneous with the Wednesday morning session, a round table conference, on quality of the blast furnace product was held. Discussion at this conference hinged on the question of what is good and bad pig iron. It was the consensus of opinion that there is no complete test for cast iron at the present time and a casting which is good for one purpose, may not be suitable for another purpose. In the same way, pig iron cannot be said to be good or bad except in relative terms based on the use to which it is to be put.

Robert E. Kennedy, representing the American Foundrymen's association at the conference, asked how foundrymen could go to the blast furnaces with a complaint when they are lacking in means of measuring the quality of the blast furnace product. Nearly all at this joint conference felt that much work would have to be done before any intelligent complaint could be made and before a specific problem could be presented to the bureau of mines.

To go on record with some statement, a committee was appointed and prepared the following:

"The gray iron foundry industry is confronted with many difficulties owing to the complexity of its product. Not the least of these difficulties is the lack of definition of the difficulties themselves. The A. F. A. committee, having come to the realization of the necessity for definition of the various elements of the problem, has reached the conclusion that progress may be expected only after these definitions have been developed. Therefore, the committee proposes to attempt the formulation of a series of specific problems, the answers to which will at least assist in the establishment of means of measuring qualities which determine the usefulness of the product, cast iron. When these means of measuring qualities have been determined, there is the immediate opportunity to determine the influence of variables in raw material and practice upon the output. We have every confidence that when the problem has been thus defined there will be found the active sympathetic co-operation among the interests involved in the prosecution of the research."

At the afternoon session, Dr. Richard Moldenke, consulting metallurgist, Watchung, N. J., acting as chairman, opened the session by calling attention to the need for a definition of good and bad iron. Dr. Herty, calling attention to the variation in foundry practice, said that whenever castings fell off in quality, the iron was blamed. However, the iron itself is only one factor in a long sequence of conditions which might produce faulty castings.

A. L. Feild said that the problem centered around the quality of liquid cast iron. He said we should be able to examine this and have the complete story independent of any further antecedent facts. He suggested the use of a quick chill to get a picture of iron at high temperatures. Dr. Herty, summing up the discussion at this point, said there were three fields of investigation: 1.—To determine what is meant by bad castings; 2.—To develop fundamental work, that is, to determine what is in iron, and 3.—To conduct plant work which will co-ordinate the results under 1 and 2.

F. B. Richards, vice president, M. A. Hanna Co., Cleveland, speaking for the blast furnace industry, described the great improvement in blast furnace practice during the past 10 or 15 years. He said when blast furnaces were faced with the problem

of securing uniformity they adopted larger and larger ladles in order to get a thorough mixture. He said his company was now using 100-ton ladles and was able to show almost no variation in silicon content in the pigs from one end of the cast to the other. He asked what more can the blast furnace people do and suggested that the investigation start at the foundry and gradually work back to the blast furnace.

J. T. MacKenzie, metallurgist and chief chemist, American Cast Iron Pipe Co., Birmingham, Ala., said that fluidity is a function of superheat above the freezing point and in order to judge the freezing point we must know the carbon content.

H. W. Gillett, chief, division of metallurgy, bureau of standards, Washington, said he felt investigation should first deal with temperature control and second with the rate of solubility of graphite. Then he said, in addition exhaustive tests both physical and chemical should be made.

J. W. Bolton, chief metallurgist, Lunkenheimer Co., Cincinnati, spoke in urgent support of Mr. Gillett's suggestion that something should be started. He said he felt that gray iron should be classified into groups. He said people were apt to speak of gray iron as something specific, whereas in reality the term included a whole range of alloys.

He thought it would be possible to divide gray iron into groups, each to cover 25 points of carbon content and then to subdivide these groups according to other compositions and finally to classify according to thermal history. The whole matter he admitted is complex but there is no other way out. Under his plan, an iron would be specified as belonging to group A, B, C, etc., cast under condition 1, 2,3, etc. Before this session ended, the group voted that a subcommittee of the American Foundrymen's association should be appointed to work in co-operation with committees from other bodies in formulating a definite plan of procedure.

The committee on cast iron of the American Foundrymen's association at its session took up the question of bibliography on cast iron. The report prepared under the direction of J. W. Bolton was presented. This is a carefully prepared compilation of articles and abstracts on cast iron from 1870 down to the present time. It is the intention of the committee and of the American Foundrymen's association to prepare a summary which will take the form of a book on cast iron based on this first bibliographical report. Robert E. Kennedy was asked to act as editor-in-chief of such a project.

Contributions Review Open-Hearth Research

THE operation of a 1-ton acid open-hearth furnace was described in a paper by C. E. Meissner, development engineer, Chrome Steel Co., Carteret, N. J. This furnace is particularly interesting because of its possibilities from an experimental point of view. In the discussion following the paper, L. F. Reinartz, assistant general superintendent, American Rolling Mill Co., Middletown, O., said that this furnace was the smallest open-hearth furnace in the country as far as he knew, and that it offered a better chance for study than the larger furnaces.

A. L. Feild, metallurgist, Union Carbide & Carbon Research Laboratories Inc., New York, said that he thought it would be possible to get the temperature much higher in a small furnace, such as the one described by Mr. Meissner, than in the usual larger type. A. B. Kinzel, metallurgist, with same laboratories, told of the use of the oxyacetylene torch to determine the quality of steel. The torch, in an experienced hand, will reveal inclusions, blow holes and many other defects.

In a paper following this discussion Mr. Feild gave a technical discussion of the rate of carbon elimination and degree of oxidation of the metal bath in open-hearth practice. The chief feature of this paper is the development of an equation representing the complete process during carbon elimination.

The paper on effect of temperature on the solubility of iron oxide in iron, prepared by C. H. Herty Jr. and J. M. Gaines Jr., both of the Pittsburgh experimental station, bureau of mines, also was a highly technical paper. In the discussion, Dr. George D. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., asked the author for a quick method of determining the nature of the slag at any point in the process. Dr. Herty said he was working on such a quick method at two or three steel works in the Pittsburgh district and he further said he would include in his written report a brief description of the methods employed for determining the character of slag.

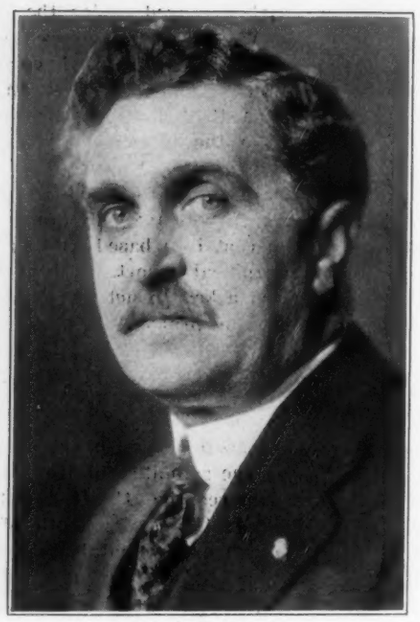
Hoover Is Awarded Saunders Medal at Banquet

AT THE annual banquet of the institute at the Waldorf hotel on Tuesday evening, with 1200 attending, the William Lawrence Saunders medal for achievement in mining was presented to Herbert Hoover, secretary of commerce. In his address of acceptance, Mr. Hoover said he was particularly pleased to receive recognition from men in his own profession. As might be supposed, no mention of politics was made. He said he was pleased to find engineers generally entering more into the great problems of industry instead of being responsible solely for the application of their technical knowledge. The work of the engineer, instead of diminishing, is growing more and more important. The complexity of modern civilization is a challenge to the engineer. We must not think merely in terms of our own generation, he said. A greater country for our children will, in a large degree, depend upon the engineering profession.

George Otis Smith, director United States geological survey, and newly elected president of the Institute presented the James Douglas medal for achievement in nonferrous metallurgy to Selwyn G. Blaylock, general manager, Consolidated Mining & Smelting Co. of Canada, Trail, B. C. The Robert W. Hunt medal went to Dr. John A. Matthews, vice president, Crucible Steel Co. of America, New York. A prize of $250 was presented to Charles H. Herty Jr., head of ferrous metallurgy, Pittsburgh laboratories of the United States bureau of mines, and a prize of $150 was given to J. E. Johnson Jr., also of the Bureau of Mines.

Industrial Men in the Day's News

George Otis Smith, New President, Mining and Metallurgical Engineers



AS A GEOLOGIST of international repute he has given special attention to coal, oil and power, the energy resources of the nation.

AUTHOR of numerous papers, he has aided in enacting federal oil land leasing legislation. He has addressed many scientific organizations.

DIRECTOR of the geological survey since 1907, *he has served on many federal commissions and committees of a technical nature.*

DIRECTOR of the United States geological survey since 1907 and geologist of international repute, George Otis Smith has been honored recently by his election to the presidency of the American Institute of Mining and Metallurgical Engineers. He has been a member of that organization since 1902, a member of its board of directors for two terms, beginning in 1921, and was a vice president in 1927.

Dr. Smith was born in Hodgdon, Me., Feb. 22, 1871, and was educated in the public schools of Augusta and Skowhegan, Me. Following his graduation from Colby college, Waterville, Me., in 1893, with the degree of bachelor of arts, he journeyed westward and joined a geological survey party as a field assistant. He later returned to college, going to Johns Hopkins university, Homewood, Baltimore, from which he was graduated with a doctor of philosophy degree in 1896. He went back to government geological work and was given a regular assignment as assistant geologist, later being appointed geologist. In 1907 he was chosen director, a position he still holds. He is now dean of government bureau chiefs.

Since becoming a director of the geological survey Dr. Smith has given special attention to coal, oil and power, the principal energy resources of the nation. His interest in coal began much earlier, however, his work in Washington in 1898-1901 having included mapping of the Roslyn coal field. He has taken part in the government statistical work on coal and made his first important contribution to the economics of coal in an address before the American Mining congress in 1916. Since then he has spoken before the American Iron and Steel institute, the American Institute of Mining and Metallurgical Engineers, the Coal Mining institute, the Army War college and other technical and scientific organizations.

Observing attempts being made to defraud the government of its oil lands, he was instrumental in effecting the enactment of the federal oil land leasing law, through his presentation of facts. He is author of numerous papers on the subject. Dr. Smith was editor and coauthor of the Strategy of Minerals, published in 1919. He published in professional paper No. 123, of the geological survey, the superpower study made in 1920 and 1921 by a special staff of engineers.

The late President Harding appointed Dr. Smith a member of the United States coal commission which functioned in 1922-1923. In 1924 he was appointed by President Coolidge to the naval oil reserve commission, and which he since has served as chairman. Following the creation by President Coolidge of the federal oil conservation board, Dr. Smith has served as chairman of its technical and advisory committee. President Roosevelt appointed Dr. Smith to one of his first federal commissions, placing him on the committee on departmental methods, known as the Keep commission, under which he was appointed chairman of the committee on accounting.

Among the various scientific and technical organizations of which Dr. Smith is a member are: Geological Society of America, American Association for the Advancement of Science, American Forestry association, Washington Academy of Sciences of which he was vice president in 1908, Mining and Metallurgical Society of America, National Geographic society of which he is a trustee, and the American Institute of Mining and Metallurgical Engineers. Dr. Smith makes his home in Washington and Skowhegan, Me.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

CHARLES T. CULBERT has been elected secretary and treasurer of the Roane Iron Co., Chattanooga, Tenn., succeeding Morrow Chamberlain, whose election to the presidency was announced in the issue of Feb. 9.

* * *

Rowland Blades has been nominated president of the Federation of British Industries succeeding Lord Gainford.

CHARLES E. STONE

Elected president, Interstate Drop Forge Co., Milwaukee, as announced in last week's issue

* * *

W. E. Bargar, formerly district manager at the Chicago office of the Baltimore Tube Co., Baltimore, has been transferred to one of the company's eastern offices.

* * *

Albert A. Tilney, president of the Bankers Trust Co., has been named a director of the Babcock & Wilcox Co., New York, maker of water tube boilers, stokers, etc.

* * *

H. O. Barker and C. C. Gibson have been elected directors of the Transue & Williams Steel Forging Corp., Alliance, O., succeeding F. B. Dussel and A. A. Mullac, who have resigned.

* * *

Jack T. Richards, associated with Weirton Steel Co., Weirton, W. Va., for the past 16 years, has been named superintendent of the hot mills, succeeding Walter Kaiser.

* * *

J. A. Downey, vice president and treasurer of the Eastern Rolling Mill Co., Baltimore, has been made secretary and director, succeeding L. J. Jones whose resignation was announced in the issue of Feb. 16.

* * *

N. E. Funk has been appointed chief engineer of the Philadelphia Electric Co., Philadelphia, suceeding William C. L. Eglin, whose death was announced in IRON TRADE REVIEW, issue of Feb. 16.

* * *

W. P. Bradley, foundry superintendent for the American Bridge Co., Ambridge, Pa., will assume his new duties as assistant to Vice President E. A. Balsey of the Wheeling Mold & Foundry Co., Wheeling, W. Va., March 1.

* * *

G. Clinton Fogwell has joined the sales department of the Alan Wood Iron & Steel Co., Widener building, Philadelphia. Mr. Fogwell formerly was district sales manager at Philadelphia for the Jones & Laughlin Steel Corp.

* * *

C. H. Kathe, purchasing agent and traffic manager of the Hill Clutch Machine & Foundry Co., Cleveland, has resigned, after being with the company 19 years. For the past 16 years he was in the above-named capacity.

* * *

Robert P. Drummond, secretary of the Drummond Mfg. Co., Louisville, Ky., maker of wagon and carriage axles, has been elected vice president and manager, succeeding James A. Drummond, whose election as president was announced in IRON TRADE REVIEW, issue of Feb. 16.

* * *

J. Edgar Duncan, formerly with the Waddell Steel Co., and L. W. Cross who has been connected with the Empire Steel Co., have been appointed sales representatives attached to the Detroit office of the newly-formed Empire Steel Corp. Harold Davey, who has been sales manager at Detroit for the Mansfield Sheet & Tin Plate Co., is now in a similar capacity for the Empire corporation.

* * *

E. A. Lerner has been appointed vice president of the Kensington Steel Co., Chicago, maker of manganese steel and castings. Mr. Lerner's career in this field dates back to 1909, and includes experience in manufacturing, selling and engineering. He has been associated with the Kensington company for ten years.

Photo by Blank-Stoller Inc.

V. A. GREENE

Newly elected vice president and general manager, Edgar Allen Steel Co. Inc., Chicago, as announced last week

* * *

R. C. Bastress, formerly with the Ft. Wayne Iron Store Co., has become associated with the Black & Decker Mfg. Co., Baltimore, maker of machinery, to handle the Indiana and part of Michigan territory.

L. W. Behausen, formerly with Slocum & Kilburn, will handle Black & Decker products in western Massachusetts.

G. N. McCarthy succeeds H. B. Austin in the Buffalo district. Mr. Austin has been transferred to the Chicago territory of Black & Decker.

* * *

E. W. Rice Jr., honorary chairman of the board of General Electric Co.,

Schenectady, N. Y., Gerard Swope, president, and C. C. Chesney, vice president, have been named members of the American committee of the World Congress of Engineers to be held in Tokio, Japan, November, 1929, in addition to Elihu Thompson, whose appointment was announced last week.

* * *

Robert Dodd and Thomas Arnold of Montreal, Que., have been elected directors of the Algoma Steel Corp., Sault Ste. Marie, Ont.

* * *

William Burg, head of a jobbing house in St. Louis bearing his own name, will celebrate the fifty-eighth anniversary of his entry into the iron and steel industry, March 1. That date is also his eightieth birthday.

* * *

A. E. Bendelari, for many years vice president in the Chicago office of the Eagle-Picher Lead Co., Chicago, has been made president. Mr. Bendelari had been in charge of the company's mining and manufacturing operations in the Joplin district for some time, prior to his election as vice president.

J. B. Swift, formerly president of the Eagle-Picher company, has been made chairman. E. B. Overbeck has been elected treasurer.

A. E. Anderson, Kieffer Mayer and Willard Matson have been chosen directors.

* * *

Henry Luedinghaus, a director of the Beck & Corbitt Iron Co., St. Louis, for 15 years, has been appointed temporarily to the presidency, succeeding William L. Niekamp, who resigned last week. Mr. Luedinghaus also is president of the St. Louis Malleable Casting Co. and the Luedinghaus-Espenschied Wagon Co.

Louis H. Jostes, private secretary to Mr. Luedinghaus for a number of years, has been made vice president and general manager of the Beck & Corbitt company, succeeding George Niekamp, a brother of the former president. George Niekamp, however, will continue with the firm.

William L. Niekamp resigned the presidency because of his desire to retire from active business.

January Auto Output Makes Good Gain

Washington, Feb. 28.— January automobile output in the United States totaled 225,039 passenger cars and trucks, making a gain of almost 100,000 over December, 1926, the department of commerce states. Further monthly comparisons follow:

	United States			Canada
	Total	Passenger cars	Trucks	Total
1926	4,298,785	3,808,753	490,032	205,092
1927				
Jan.	238,926	199,650	39,276	15,376
Feb.	304,763	264,171	40,592	18,655
March	394,436	345,911	48,525	23,250
April	404,745	357,009	47,736	24,611
May	404,097	357,148	46,949	25,708
June	321,946	278,728	43,218	19,208
July	268,469	236,866	31,603	10,987
Aug.	308,782	274,350	34,432	12,526
Sept.	**260,378	226,440	**33,939	11,262
**Oct.	219,711	183,041	36,670	7,791
**Nov.	134,409	109,756	24,653	6,617
**Dec.	133,547	106,079	27,468	3,435
**Total	3,394,255	2,939,177	455,078	179,426
1928				
Jan.	225,039	199,032	26,007	8,463

*Reported by Dominion bureau of statistics.
**Revised.

Malleable Castings in Steady Rise

Washington, Feb. 28.—Malleable castings production continued to rise in January, totaling 54,818 tons, according to department of commerce statistics. Monthly comparisons follow:

	Total tons produced	Per cent of capacity	Total tons booked	†Monthly capacity
1926				
Total	715,384	54.7	607,949	1,307,889
1927				
January	51,492	48.8	50,994	105,619
February	57,382	54.8	58,039	104,686
March	66,372	62.2	53,597	106,698
April	59,225	55.8	56,326	106,163
May	57,655	54.1	49,482	106,473
June	58,972	55.3	46,178	106,736
July	48,202	43.9	45,782	104,287
August	51,394	48.6	42,515	105,717
September	45,210	43.3	37,912	104,401
October	46,765	46*	39,494	101,606
November	40,845	40.5	34,624	100,778
December	47,876	47.6	49,215	100,685
(year)	631,388	50.4	564,158	1,253,849
1928				
January	54,818	59.6	53,153	92,015

†Capacity during 1927 has been based on following formula: "Total number of units of molding floor space, times average production per molder per day per unit of floor space, times number of actual working days per month." Beginning January, 1928: "Average monthly production for the best six consecutive months since Jan. 1, 1919, is to be taken as a practical monthly capacity."

Foundry Equipment Up

Cleveland, Feb. 28.—January foundry equipment orders made a good increase over December, according to the figures supplied by the Foundry Equipment Manufacturers association. Monthly comparisons follow:

	1925	1926	1927	1928
Jan.	104.2	168.2	180.4	129.7
Feb.	108.8	154.9	198.0	.....
Mar.	159.3	157.3	131.1	.....
Apr.	124.3	113.2	130.0	.....
May	113.3	128.5	134.8	.....
June	110.5	133.5	138.4	.....
July	117.0	127.3	89.9	.....
Aug.	190.0	141.2	106.4	.....
Sept.	94.2	114.0	80.4	.....
Oct.	149.5	140.5	98.0	.....
Nov.	180.3	133.4	95.8	.....
Dec.	140.1	181.0	106.8	.....

Base: Average monthly shipments for 1922-23-24.

Plate Bookings Down

Washington, Feb. 28.—Fabricated steel plate bookings in January declined, the following figures from the department of commerce show:

Total	*Total	Oil storage tanks	Gas holders	Blast furnaces	Stacks and miscellaneous
1926					
(year)	513,913	175,367	47,524	14,406	196,849
1927					
Jan.	35,854	14,342	1,994	568	9,839
Feb.	59,643	32,983	3,334	606	16,847
March	55,407	24,127	5,135	857	17,900
April	47,347	18,019	9,450	420	15,089
May	37,883	10,855	2,524	364	20,865
June	28,811	7,402	2,263	1,026	15,192
July	35,326	17,199	1,034	537	14,274
Aug.	48,577	29,691	3,504	481	11,385
Sept.	38,662	15,421	2,254	873	14,576
Oct.	47,090	18,648	3,252	385	11,599
Nov.	27,341	8,920	978	422	10,794
Dec.	35,648	13,367	3,490	385	13,088
Total (year)	497,697	210,974	39,212	6,924	171,318
1928					
Jan.	32,810	8,758	2,062	1,225	15,778

Algoma Sets Wage Record

Toronto, Ont., Feb. 28.—When the Algoma Steel Corp., Sault Ste. Marie, Ont., paid out $365,000 in wages in January it set a new postwar monthly record. The corporation's rail mill is now on double shift and all 12 open hearths are on. Steel is being shipped to the Ford Motor Co.

Obituaries

CHARLES M. POWER, 68, president and treasurer of the St. Paul Foundry Co., St. Paul, and an industrial leader in the Northwest for many years, died at his home there, Feb. 14. He was bookkeeper for the H. W. Topping Co., and when this company was reorganized into the St. Paul Foundry Co., he was made secretary. He was appointed president and treasurer in 1883.

* * *

John McKaig, 72, at one time president of the Buffalo Engine Co., Buffalo, died at his home in that city recently. He retired from active business five years ago.

* * *

Daniel L. Lott, 68, vice president and superintendent of the Loomis Machine Co., Tiffin, O., died at his home in that city Feb. 25. He became associated with the Loomis company when 16 and last year celebrated his fiftieth anniversary as an employe.

* * *

Anthony L. Herkenhoff, 56, general manager of the Minster Machine Co., Minster, O., builder of power presses, since he assisted in its organization in 1898, died at Sidney, O., Feb. 21. Mr. Herkenhoff was also vice president and manager of the St. Mary's Foundry Co., St. Marys, O., and was president of the Streine Tool & Mfg. Co., New Bremen, O., being a founder of both companies.

British Ship Demands Heavy

Admiralty Places More Vessels—Railroads Ordering Rolling Stock—Continental and American Consumers Purchasing Pig Iron—Sheet and Tin Plate Requirements Larger—Germans Underselling Belgians and French

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Feb. 28.—Improvement in the British iron and steel market is gradual. Some American orders for pig iron are noted in the Barrow district. French consumers have purchased 3000 tons of pig iron at Middlesbrough.

Shipbuilding is leading activity, 1,579,713 tons being under construction. The admiralty has placed seven destroyers with private yards. Railroads are ordering rolling stock. Constructional work is improving, but the tonnage is small. Imports show substantial reductions. Sheet and tin plate makers are using more British material. Improvement continues in the market for galvanized sheets. Demand for tin plate also is better on the Continent, in South America, Australia and the Far East.

A lockout of German steelworkers has been averted due to official intervention, according to reports from Berlin. German exports are increasing.

Belgian steelmakers have received orders recently from China, Japan, India and Argentina. The markets are firm. German steelmakers are underquoting Belgian and French interests.

British Steelmakers Regain Domestic Market

LONDON, Feb. 10.—(European Staff Service)—Although the iron and steel export markets are not showing great activity, continental export prices have advanced sharply. This is mainly because many producers in France, Belgium and Germany are well booked for orders and now are out of the market, awaiting developments.

British buying of steel on the continent has somewhat subsided, as continental prices are not now as competitive in Great Britain as they had been for a long time. There still is a margin, however, and several thousand tons of semifinished steel have been ordered during the past two weeks. Continental sheet bars have been quoted at as high as £4 14s ($22.75). The British have transacted some fair tonnages with Australia, India and South Africa. British engineering works have been successful in obtaining contracts for the colonies and dominions in the face of continental competition. Recently the Gloucester Railway Carriage & Wagon Co., Ltd., contracted for four first-class cars for Nigeria. Sir William Arrol & Co., Ltd., have obtained two 75-ton electric overhead cranes and one 5-ton jib crane for India. Pease & Partners, Ltd., have sold 20,000 tons of castings and 15,000 tons of rails to the dominions. Hollings & Guest Ltd., have obtained the order for a hydraulic plate-flanging press for China. In most engineering contracts for the British colonies and dominions the British have the advantage over their continental competitors, even at a higher price, because the foreigner is not often disposed to follow British specifications or roll British sections. Furthermore, the British generally offer better delivery. A British steelworks in India is inquiring for 50-ton and 100-ton pouring ladles, both in England and on the continent. A Midland firm which specializes in stamping automobile bodies would accept continental auto sheets at £21 10s ($103)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, February 27	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$15.86	3 5 0*	$16.10	3 6 0	$16.10	3 6 0	$16.10	3 6 0
Basic	.....	.....	14.64	3 0 0	14.64	3 0 0	15.37	3 3 0
Basic-bessemer	17.10	3 10 0†	14.64	3 0 0	14.64	3 0 0	14.64	3 0 0
Hematite, Phosphorus 0.02-0.05	17.10	3 10 0	21.84	555*	.....	.....	17.10	3 10 0
SEMIFINISHED STEEL								
Billets	$28.06	5 15 0	$22.69	4 13 0	$22.69	4 13 0	$21.23	4 7 0
Wire rods	47.58	9 15 0	16.84	5 10 0	26.84	5 10 0	26.84	5 10 0
FINISHED STEEL								
Standard rails	$37.82	7 15 0	$31.11	6 7 6	$31.11	6 7 6	$31.11	6 7 6
Merchant bars	1.58c	7 5 0	1.17c	5 6 0	1.17c	5 6 0	1.13c	5 3 0
Structural shapes	1.61c	7 7 6	1.03c	4 14 0	1.03c	4 14 0	1.00c	4 7 0
Plates, ship, bridge and tank	1.77c	8 2 6	1.38c	6 5 0	1.38c	6 5 0	1.38c	6 5 0
Sheets, black, 24 gage	2.40c	11 0 0	2.34c	10 12 6	2.34c	10 12 6	2.86c	13 0 0
Sheets, galvanized, 24 gage, corrugated	2.91c	13 7 6	3.30c	15 0 0	3.25c	14 15 0	3.74c	17 0 0
Bands and strips	2.83c	10 10 0	1.35c	6 3 0	1.35c	6 3 0	1.49c	6 15 0
Plain wire, base	2.12c	9 15 0	1.54c	7 0 0	1.54c	7 0 0	1.57c	7 3 0
Galvanized wire, base	2.94c	13 10 0	1.98c	9 0 0	1.98c	9 0 0	2.01c	9 3 0
Wire nails, base	2.51c	11 10 0	1.62c	7 7 6	1.62c	7 7 6	1.67c	7 12 0
Tin plate, base box 108 pounds	$ 4.39	0 18 0	.....	.....	.....	.....	$ 6.83	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$15.86	3 5 0	$17.12	435(2)	$16.46	590	$18.63	78
Basic pig iron	.....	.....	18.49	470(1)	15.21	545	21.02	88
Furnace coke	2.93	0 12 0	5.90	150	5.16	185	5.14	21.50
Billets	28.06	5 15 0	20.66	525	22.32	800	27.47	115
Standard rails	1.74c	8 0 0	1.36c	755	1.43c	1,100	1.51c	140
Merchant bars	1.63c	7 10 0	1.12c	620	1.17c	900	1.48c	137
Shapes	1.66c	7 12 6	1.04c	575	1.16c	895	1.45c	134
Plates, ship, bridge and tank	1.82c	8 7 6‡	1.33c	740	1.47c	1,130	1.65c	153
Sheets, black, 24 gage	2.51c	11 10 0	2.47c	1,370	2.28c	1,750	2.38c	220
Sheets, galvanized 24 gage, corrugated	2.83c	13 0 0	3.36c	1,865	3.67c	2,825	3.78c	350
Plain wire	2.11c	9 15 0	1.71c	950	1.82c	1,400	2.32c	215
Bands and Strips	2.29c	10 10 0	1.35c	750	1.59c	1,225	1.71c	158

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.93) f. o. b. Ferromanganese £20 10s 0d ($100.04) delivered Atlantic seaboard, duty paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

per ton. This price is delivered.

On the continent most works are well booked and are not anxious to take on further commitments. This applies particularly to France, Belgium and Germany, as Luxemburg makers are not so comfortably off and now are offering slight concessions to fill their order-books. German steelmakers, in addition, find domestic business more remunerative than export trade, although they have been booking some foreign orders of late. They also fear that they may have to restrict production somewhat, owing to the difficulty in obtaining Swedish ores and the necessity of using Lorraine ore. The Germans are, in fact, buying semifinished products in France. In Belgium prices have reached a high level, bars having been quoted at as high as £5 5s ($25.50), as against £4 18s ($23.80) two weeks ago. However, the impression is that no orders have been taken at the higher prices, but that transactions have taken place on the quiet at prices still well above those prevailing at the end of January. In view of the strike in Sweden Spanish iron ore is firm and in good demand.

French Imports Gain as Exports Drop

Paris, Feb. 13.—(*European Staff Service*)—Provisional figures giving French imports and exports of the principal iron and steel products for December, 1927, show December exports of pig iron were the smallest registered during the year, the highest figure having been reached in May with 85,844 metric tons and the record figure in December, 1925, with 94,198 tons. Complete import and export figures for the year 1927 will shortly be published. The following table gives monthly figures for the year 1927, compared with the monthly averages of 1927 and the three preceding years, in metric tons:

Mon. ave.	IMPORTS Pig iron	IMPORTS Steel	EXPORTS Pig iron	EXPORTS Steel
1924	3,540	56,780	63,900	187,380
1925	2,693	11,703	58,855	272,270
1926	1,990	11,840	58,545	256,050
1927				
Jan.	1,153	6,412	82,286	343,378
Feb.	2,536	8,073	69,370	382,368
March	1,730	9,199	65,906	377,779
April	1,720	8,043	70,252	410,286
May	3,978	7,811	85,844	345,584
June	6,129	6,941	75,119	330,151
July	5,083	6,122	68,454	351,754
August	3,454	4,979	74,566	367,473
Sept.	2,132	3,901	60,797	365,200
Oct.	2,119	3,965	62,625	394,207
Nov.	2,715	5,597	61,558	341,813
Dec.	5,988	6,860	58,926	339,699

Belgian Steel Prices Are Higher

Office of IRON TRADE REVIEW,
9 Rue de Londres

Franc—2.78c

BRUSSELS, Feb. 15.—(*European Staff Service*)—A substantial rise has been registered on the Belgian iron and steel market, although the higher prices have been accepted by only a small number of speculative buyers who were anxious to cover. These transactions, however, have helped maintain a firm tone. The initial hardening of prices was the result of several factors, mainly the strike in the Swedish iron ore mines, which resulted in a decrease of ore to German furnaces. German iron and steel works have curtailed production until they are able to obtain ore supplies from France, and adapt their manufacture to this change of raw material. The strikes which have developed in iron and steel works in various parts of Germany, and the critical situation in Belgian collieries, also have tended to reduce production.

On the Brussels iron and steel exchange prices began to rise at the Feb. 1 meeting, and this movement continued at the meeting of Feb. 8. Merchant bars are quoted at £5 2s 6d ($24.80) and it is reported £5 5s ($25.35) has been quoted on one or two occasions. Only four works were on the market: Cockerill, Clabecq, Thy-le-Chateau, Sambre-et-Moselle. With regard to export business, the leading merchants state their foreign buyers will not accept £5 ($24.25) for bars. As soon as prices rise buyers refrain from passing orders, whereas a gradual hardening of prices by 6d or 1s (24c) in the course of a week does not frighten buyers off. Consequently exporters are not too satisfied with the recent increase in prices, which, according to their views, was too sudden.

Basic bessemer blooms are quoted at £4 1s ($19.60) and 2-inch billets at £4 10s ($21.75). Standard beams are quoted at £4 12s ($22.20) and British sections at £4 13s ($22.50). Three-millimeter sheets are sold at £6 5s ($30.25). The situation in wire nails remains unchanged, but mills now are soliciting orders from exporters, which tends to indicate domestic demand has fallen off. It will be noted that bars have increased by about 5s ($1.20) per ton during the past two weeks.

German Steel Mills Well Booked

Mark—23.86c

BERLIN, Feb. 15.—(*European Staff Service*)—In contradiction to certain reports leading steelworks in Germany declare there is no decrease in volume of new orders and that present orders are sufficient to give occupation at the present rate for two to three months. The Vereinigte Stahlwerke, or United Steel Works, has published production figures for the quarter ending Dec. 31, 1927, which show a fair development of output; these figures are given in the following table, in metric tons, where the quarter is compared with preceding quarter;

	Quarter ending Dec., 1927	Quarter ending Sept., 1927
Coal	6,667,600	6,553,520
Coke	2,309,270	2,147,171
Pig iron	1,725,719	1,663,398
Steel (raw)	1,831,538	1,781,754

At the same time the number of workers has decreased by a few hundred and was 198,081 Dec. 31, as a result of the rationalization of the works. Turnover in the quarter ending Dec. 30, 1927, totaled 361,669,789 marks ($86,000,000), compared with 354,333,646 marks ($84,500,000), which was the average turnover for each quarter of the financial year ending Sept. 30, 1927. The value of export business decreased from 111,123,495 marks ($26,500,000) in the third quarter to 101,705,802 marks ($24,250,000) in the fourth, whereas for domestic business there was an advance from 243,210,151 marks ($58,000,000) in the third quarter to 259,963,987 marks ($62,000,000) in the fourth. Profits probably have increased in consequence, as domestic prices were higher than those available abroad. On the other hand, a certain danger results from possible loss of export markets, especially if domestic activities were to fall off.

Recently there have been some inquiries from foreign markets, especially from South Africa and Japan. Exports in December, 1927, were slightly in excess of those of preceding months. Total exports for the year were substantially less than in 1926. Exports for 1927 amounted to 4,530,691 metric tons, against 5,347,627 tons in 1926. Imports for 1927 were 2,896,840 metric tons, compared with 1,261,447 tons in 1926. These figures reveal a drop of export surplus from about 4,000,000 metric tons to 1,600,000 tons. This loss is ascribed partly to troubles in the Far East and partly to heavy competition on the part of France and Belgium. During the past weeks export sales of wire products have increased, and a larger tonnage of merchant bars also has been exported.

There is some uncertainty in the domestic market owing to continued conflict between leading producers and independent merchants in the Rhineland district. Furthermore, the influence on business of the recent increase in wages and the new working hours also is still uncertain.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

KOPPERS CO., Pittsburgh, builder, owner and operator of by-product coke and gas plants in this and other countries, is building a 32-story building in Pittsburgh, in which it will occupy the fourth to fifteenth floors. The structure, known as the Koppers building, is at Seventh avenue and Grant street. Plans are by Graham, Anderson, Probst & White and E. P. Mellon is consulting architect. Completion is planned for Jan 1, 1929. The building fits well into the crosstown city planning scheme and is accessible to transportation and important public buildings. Koppers Co. established its headquarters in Pittsburgh in 1915 and the new building is to meet needs of its growing interests.

* * *

AMERICAN BOLT CO., Birmingham, Ala., has electrified its power facilities and shortly will install new production machinery.

* * *

WARNER GEAR CO., Muncie, Ind., is installing equipment in an addition recently completed. Automotive transmissions will be produced in this department.

* * *

COPPER AND BRASS RESEARCH ASSOCIATION, New York, has opened a branch office in Los Angeles, in charge of Timothy G. Turner. It is in the Architects' building.

* * *

HK. FERGUSON CO., Cleveland, engineer and builder, has re-elected officers, as follows: President, Harold K. Ferguson; vice president, J. S. Ruble; secretary, H. S. Jacoby; assistant secretary, F. H. Maag.

* * *

ILLINOIS PUMP CO., Eldorado, Ill. recently incorporated, is financing a plant for the manufacture of pumps. It is capitalized at $25,000. J. C. Harbison is president and R. E. Stinson secretary.

* * *

KELLY-DECKER CO., New York, has been organized by A. E. Kelly and W. A. Decker with headquarters at 39 Cortland street and is engaged in the sale of pig iron and coke. Mr. Kelly is agent in New York territory for Niagara pig iron produced by the Donner Steel Co., Buffalo. The company also is agent for the Domestic By-Product Coke Co., Fairmount, W. Va. Mr. Kelly and Mr. Decker had been with the Kelly-Decker-Cleary Co., New York, and previous to that with the Debevoise-Anderson Co., New York.

* * *

HOME FIRE APPARATUS CO., Anderson, Ind., has elected the following officers: President, L. M. Howe; vice president, P. G. Howe; secretary, Ben Howe; assistant secretary, Jack Leever; treasurer, A. T. Dye.

* * *

EQUIPMENT & SUPPLY CO., Baxter avenue station, Louisville, Ky., has opened offices and display room and will specialize in mechanical equipment, machinery and supplies.

* * *

JACKSON IRON & STEEL CO., Jackson, O., has elected officers as follows: President, D. D. Davis, Oak Hill; vice president, Edward Daehler, Portsmouth; secretary, J. W. Potter, Jackson; treasurer, J. Stanley Morgan, Jackson.

* * *

AUSTIN WESTERN ROAD MACHINERY CO., Chicago, will establish a direct factory branch at Braddock, Pa. A. L. Bush will be manager. The office will serve western Pennsylvania, West Virginia, eastern Ohio and part of Maryland.

* * *

GRAHAM BROS., manufacturers of the Graham-Paige automobile, Detroit, have bought the plant of the Karges Wagon Works, Evansville, Ind., and will equip it for the manufacture of automobile bodies.

* * *

SUPERIOR SCREW & BOLT MFG. CO., Cleveland, has elected N. T. Jones president, a promotion from vice president. B. G. Tremaine Jr., former president, has been made chairman of the board. H. D. Simpkins, former secretary, is now vice president. C. L. Wedow is secretary and continues as director of sales. R. H. Flues, representative at Detroit, has been made a vice president. Mr. Jones and Mr. Simpkins were re-elected directors.

* * *

WEISMAN LUGGAGE MFG. CORP., manufacturer of automobile trunks, has bought a plant at Canastota, N. Y., and will install equipment for production of trunks and stampings for automotive parts.

* * *

FERRO ENAMEL SUPPLY CO., Cleveland, is installing a complete porcelain enameling department for the Mt. Vernon Furnace & Foundry Co., Mt. Vernon, Ill., and a similar department with electric furnace for the American Signs Corp., Kalamazoo, Mich.

* * *

MA. HANNA CO. has taken exclusive sales agency in Pittsburgh for the Bulger Block Coal Co., which has capacity for 1200 tons per day. Charles R. Keenen, formerly with the coal company, is now associated with the Pittsburgh office of the M. A. Hanna Co.

* * *

HAMILTON-DIUGUID INC., Brooklyn, N. Y., successor to H. A. Diuguid Co., has been incorporated recently to continue the business of the latter in motor rebuilding and general machine work. Edward T. Hoebich is president, Kenneth L. Sloane vice president and treasurer and Charles F. Hohenrath secretary.

* * *

BATH IRON WORKS CORP., Bath, Me., has elected the following officers: President and general manager, William S. Newell; vice president and naval architect, Archibald M. Main; treasurer and assistant secretary, L. Eugene Thebeau; secretary and corporation counsel, Charles M. Hall; directors, Walter S. Wyman, Charles M. Hall, Charles M. Cahill, Archibald M. Main, William S. Newell, Frederic C. Lowe and Eugene Thebeau.

* * *

FAVORITE STOVE & RANGE CO., Piqua, O., has elected officers as follows: President and general manager, Maurice Wolf; chairman of the board, Stanhope Boal; vice president and assistant general manager, William C. Katker; secretary and treasurer, Leon M. Frigge; directors, Stanhope Boal, Maurice Wolfe, William C. Katker, Leon M. Frigge, John H. Fecker, Jacob Bettman and John C. Duncan.

* * *

GARTLAND-CARROLL FOUNDRY CO., Sandusky, O., has elected the following officers: Chairman of

(*Concluded on Page* 611)

January Export Tonnage High

Shipments, Totaling 205,766 Tons, Best Figure Since January, 1927—Imports Fall Behind December With 15 Classes Showing Reductions—Steel Rails and Scrap Make Gains in Both Divisions While Shapes Decline

WHILE exports of iron and steel products from the United States in January reached the highest mark of any month since January, 1927, imports dropped 8.9 per cent behind the December, 1927 total, figures supplied by the iron and steel division of the department of commerce indicate. Exports in January totaled 205,766 tons, exceeding the December, 1927, figure by 37,338 tons. This trade was featured by notable gains in the shipment of steel rails, scrap, rail fastenings, tin plate and wire rods. The improvement in those products more than neutralized losses, especially in plain structural shapes, plates, black steel sheets and iron castings.

Imports declined 5553 tons from December, totaling 58,635 tons. This was due to the fact that 15 of the 27 classifications into which the import trade is divided showed decreases, 11 registered gains, and one no change. Shapes, pig iron, ferromanganese and alloys were the principal items developing decreases, while steel sheets, rails and splice bars and scrap made comfortable gains.

North and Central America and the West Indies received 38 per cent of the iron and steel exports in January, compared with 48.2 per cent in December. South American shipments increased 19.1 per cent in January, compared with 16.4 per cent in December. The Far East also received more iron and steel products in January, taking 37.1 per cent of the total shipments. In December, 28 per cent of all exports went to this market.

Imports from Belgium consisted mainly of structural shapes, with steel bars a third of the total. From Germany, the principal item was sheets, comprising one-third of the total, with shapes constituting one-fourth. United Kingdom sent pig iron and ferromanganese mostly.

Exports of steel scrap, totaling 29,376 tons, went mostly to Japan and Canada, the former receiving 16,933 tons and the latter 11,535 tons, both increases over the previous month. Tin plate and terne plate exports increased from 15,856 tons in December to 19,668 tons in January. Japanese receipts were 8908 tons, 3000 tons higher than the December figure.

Steel rails exported in January totaled 23,174 tons, gaining almost 8000 tons over December. Much of the tonnage went to China, receipts by this country totaling 8833 tons. Brazil, receiving 776 tons in December, took 4213 tons in January.

Exports of black steel sheets to

IMPORTS AND EXPORTS
Gross Tons

	—1928—		—1927—	
	Imports	Exports	Imports	Exports
Jan.	58,635	205,766	63,404	215,235
Feb.	.....	.....	49,451	166,128
March	.....	.....	61,872	171,094
April	.....	.....	60,374	192,339
May	.....	.....	79,814	202,708
June	.....	.....	69,017	184,364
July	.....	.....	61,112	190,502
Aug.	.....	.....	68,386	175,636
Sept.	.....	.....	58,464	166,352
Oct	.....	.....	52,503	170,255
Nov.	.....	.....	61,882	177,928
Dec.	.....	.....	64,188	168,428
Total	58,635	205,766	750,467	2,180,969

ORIGIN OF PIG IRON IMPORTS
Gross Tons

From:	Jan.	Dec.
Germany	40	.....
Netherlands	1,446	3,451
Sweden	56	27
United Kingdom	3,750	2,741
Canada	172	36
Mexico	29	.....
British India	5,634	8,044
Total	11,127	14,299

ORIGIN OF IRON ORE IMPORTS
Gross Tons

From:	Jan.	Dec.
Germany	315	321
Canada	2,358	6,405
Cuba	14,000	29,500
Chile	150,800	61,500
Algeria and Tunis	63,675	.....
Jamaica	11,000	.....
Persia	1,750	.....
Egypt	7,280	.....
Australia	.....	5,000
Sweden	.....	20,178
Newfoundland	.....	8,850
Total	251,178	131,837

ORIGIN OF MANGANESE IMPORTS
(Concentrates)
Gross Tons

From:	Jan.	Dec.
Germany	4	5
Canada	20	.....
Chile	964	.....
British India	5,959	2,691
British West Africa	2,323	2,834
Soviet Russia in Europe	.....	15,161
Brazil	.....	10,160
Total	9,292	30,851

ORIGIN OF FERROMANGANESE IMPORTS
Gross Tons

From:	Jan.	Dec.
France	34	.....
Norway	1,204	2,641
United Kingdom	2,487	1,441
Canada	1,459	4,252
Total	5,184	8,334

ORIGIN OF IMPORTS
Gross Tons
January, 1928

From:	Steel bars	Steel scrap	Ingots, blooms, etc.
Belgium	5,200	.....	573
France	1,050	.....	677
Germany	1,067	26	10
Netherlands	9	.....	.....
Sweden	466	134	46
United Kingdom	37	1,415	9
Canada	8	2,090	4
Norway	2	.....	.....
Czechoslovakia	37	.....	.....
Panama	.....	381	.....
Jamaica	.....	628	.....
Totals	7,876	4,674	1,319

IMPORTS OF IRON AND STEEL
Gross Tons

Product	January 1928	December 1927	January 1927
Pig iron	11,127	14,299	9,326
Ferromanganese and alloys (1)	5,184	8,334	1,201
Ferrosilicon (2)	405	788	957
Ferrochrome (3)	31	...	359
Scrap	4,674	3,462	5,920
Iron slabs	....	....	....
Steel ingots, blooms, billets, etc	1,319	1,917	944
Steel bars	7,876	8,117	6,560
Iron bars	149	822	632
Wire rods	1,079	1,075	1,512
Hoops, bands and scrolls	1,683	2,077	2,946
Boiler and other plate	58	544	425
Sheets, skelp and saw plate	4,292	1,338	1,646
Tin plate	39	10	23
Structural shapes	11,080	14,529	11,363
Rails and splice bars	3,150	641	2,744
Cast iron pipe	2,778	3,112	9,534
Other pipe and tubes	2,046	1,725	5,146
Barbed wire	350	261	459
Round iron and steel wire	294	296	185
Steel telegraph and telephone wire	46	3	23
Flat wire and strip steel	135	144	344
Wire rope and strand	94	150	117
Other wire	41	17	21
Nails, tacks and staples	181	224	526
Bolts, nuts, rivets and washers	25	26	21
Castings and forgings	499	277	443
Total	58,635	64,188	63,404

(1) Manganese content.
(2) Silicon content
(3) Chromium content

IMPORTS BY COUNTRIES OF ORIGIN
Gross Tons

	Jan., 1928	Dec., 1927	Jan., 1927
Belgium	15,322	16,118	19,092
Czechoslovakia	125	22	60
France	6,022	6,535	11,927
Germany	10,211	8,404	17,347
Netherlands	1,720	3,549	4,521
Norway	1,209	3,308	6
Poland and Danzig	2,539	538	.....
Sweden	1,228	2,641	1,284
United Kingdom	8,561	5,276	2,867
Canada	4,997	7,855	5,471
Panama	381	.....	19
Mexico	29	.....	.....
Jamaica	628	.....	.....
British India	5,634	8.044	771
Hongkong	2	.....	1
Japan	27	3	1
Austria	.....	1,815	48
Denmark	.....	21	.....
Italy	.....	4	22
Switzerland	.....	2	.....
Cuba	.....	53	.....
Dominican Republic	.....	.....	15
Totals	58,635	64,188	63,452

Japan totaled 10,884 tons in January, compared with 3296 tons in December.

Although most countries sent less iron and steel products to the United States in January than in December, receipts from Germany increased from 8404 tons in December to 10,211 tons in January. Imports from Canada totaled 4997 tons in January, dropping from 7855 tons in December. United Kingdom shipments here increased, however, from 5276 tons in December to 8561 tons in January.

British India, shipping 8044 tons to the United States in December, sent only 5634 tons in January.

EXPORTS OF IRON AND STEEL
Gross Tons

Product	January 1928	December 1927	January 1927
Pig iron, not including ferro-alloys	4,403	3,079	3,734
Ferromanganese and spiegeleisen	1	75	55
Scrap	29,376	22,668	4,102
Ingots, blooms, skelp, etc.	5,674	2,610	3,212
Iron bars	395	94	432
Steel bars	8,093	7,983	12,337
Alloy steel bars	521	700	490
Wire rods	3,970	1,448	2,319
Plates	10,009	15,444	10,470
Galvanized sheets	11,097	9,574	19,474
Black steel sheets	17,552	8,181	15,506
Black iron sheets	1,036	2,506	1,570
Hoops, bands and strip steel	3,319	2,751	4,037
Tin plate, terne plate, etc.	19,668	15,856	41,875
Structural shapes, plain material	9,812	14,310	9,048
Structural materials, fabricated	6,560	4,811	4,985
Metal lath	342	416	425
Steel rails	23,174	15,717	23,020
Rail fastenings, switches, frogs, etc	9,370	4,383	3,172
Boiler tubes and welded pipe	20,295	18,154	41,325
Malleable iron screwed pipe fittings	1,492	828	1,015
Cast iron screwed pipe fittings	478	702	525
Cast iron pressure pipe and fittings	1,568	396	812
Cast iron soil pipe and fittings	817	514	436
Plain wire	3,786	2,891	2,273
Barbed wire and woven wire fencing	5,314	4,128	2,222
Wire cloth and screening	182	167	239
Wire rope	485	398	474
Insulated wire and cable	54	21	32
Other wire and manufactures of	690	855	584
Wire nails	1,477	1,369	770
Nails, other than wire	664	800	647
Tacks	72	74	111
Horseshoes	55	54	37
Bolts, nuts, rivets, except track	867	1,196	1,002
Car wheels and axles	932	827	1,115
Iron castings	1,065	1,525	770
Steel castings	707	572	420
Forgings	394	351	211
Total	205,766	168,428	215,283

DESTINATION OF EXPORTS
Gross Tons

Country of destination	Jan. 1928	Dec., 1927	Jan., 1927
North and Cent. America, W. Indies	78,478	81,033	78,606
Canada and Newfoundland	61,647	61,787	56,213
Cuba	3,892	5,006	6,918
Mexico	4,874	6,295	7,976
Guatemala	3,284	333	531
Salvador	217	3,452	425
Panama	448	1,186	1,022
Other British W. Indies	541	629	1,717
Other W. Indies	2,619	944	2,227
Other Cent. America	956	1,401	1,577
South America	39,035	27,713	56,007
Argentina	10,063	6,915	11,540
Brazil	9,018	3,492	13,168
Chile	5,810	4,917	1,935
Colombia	4,656	5,192	12,713
Peru	1,261	1,776	974
Venezuela	7,345	3,486	13,505
Other S. America	882	1,935	2,172
Europe	9,347	9,785	17,293
France	237	173	459
Italy	848	1,763	1,039
Rumania	385	749	593
Turkey in Europe	21	77	560
United Kingdom	4,705	4,316	10,358
Other Europe	3,151	2,707	4,284
Far East	77,861	47,127	61,045
Australia	2,559	1,670	3,963
British Malaya	504	723	2,745
China	14,857	4,748	8,786
Dutch E. Indies	2,190	1,912	6,744
India	1,191	1,792	4,363
Japan and Chosen	47,320	27,054	26,651
Kwangtung	1,435	344	311
Philippine Islands	7,390	6,702	4,367
Other Asia, Far Eastern markets	415	2,182	3,115
Africa	1,045	2,770	2,332
British S. Africa	752	2,442	769
Egypt	66	86	398
Portuguese E. Africa	46	61	881
Other Africa	181	181	284

EXPORTS OF METALWORKING MACHINERY
(In number except where otherwise specified)

	January 1928	January 1927
Engine lathes	66	36
Turret lathes	26	8
Other lathes	57	21
Vertical boring mills and chucking machines	7	9
Thread-cutting and automatic screw machine	74	82
Knee and column type milling machines	30	25
Other milling machines	81	25
Gear-cutting machines	31	21
Vertical drilling machines	42	24
Radial drilling machine	18	7
Other drilling machines	42	56
Planers and shapers	40	41
External cylindrical grinding machines	77	71
Internal grinding machines	46	21
Metalworking tool-sharpening machines	49	63
Other metal-grinding machines	197,091	113,942
Sheet and plate metalworking machines	516,933	312,433
Forging machinery	414,740	365,151
Rolling-mill machinery	897,154	739,170
Foundry and molding equipment	194,357	747,175
Other power-driven metalworking machinery and parts	714,719	.....
Pneumatic portable tools	1,577	1,327
Other portable and hand or foot operated metalworking machines and parts	53,983	81,858
Chucks for machine tools	572	2,092

Iron Output Up; Steel Off

Toronto, Ont., Feb. 28.—Canadian production of pig iron in January was 65,006 long tons, compared with 63,197 tons in December and 51,717 tons last January.

Output of steel ingots and castings in January totaled 84,295 tons, compared with 96,248 tons in December and 58,551 tons last January.

Wire Merger Offices at Crawfordsville

Headquarters are being established at Crawfordsville, Ind., for the Mid-States Steel & Wire Co., formed by the merger of the Crawfordsville Wire & Nail Co., Crawfordsville; Adrian Fence Co., Adrian, Mich., and Dwiggins Wire Fence Co., Anderson, Ind.

J. E. Vandeventer, formerly secretary and treasurer of the Dwiggins company, is chairman and John Sommer, formerly president of the Crawfordsville company, is president.

The new company has assets of $2,500,000. It will have $650,000 in preferred stock and 30,000 shares of no par common. Consolidation is being effected through an exchange of stock on the basis of appraised assets.

Planning To Simplify Buffing Wheels

Washington, Feb. 28.—Announcement has been made by the simplified practice division, department of commerce, that a preliminary conference will be held in New York, March 7, to discuss the possibility of simplification of polishing and buffing wheels. It is understood that B. H. Divine, president, Divine Brothers Co., Utica, N. Y., has accepted the chairmanship of a simplification committee in this industry which is now being appointed.

DESTINATION OF JANUARY IRON AND STEEL EXPORTS
Gross Tons

	Rails	Galvanized sheets	Plates not fabricated	Tin, terne plate	Steel sheets black	Barbed wire	Steel bars	Steel scrap
Argentina	1,356	1,014	60	1,684	.....	1,508	.....	.....
Australia	.....	182	198	.....	80	32	.....	.....
Brazil	4,213	1,036	14	873	.....	1,379	10	.....
British India	.....	788	.....	.....	.....	.....	.....	.....
British S. Africa	.....	40	.....	.....	.....	341	.....	.....
Canada	742	1,536	7,933	2,266	3,759	.....	4,703	11,535
Central America	.....	268	2	.....	6	221	74	.....
Chile	1,477	.....	38	391	.....	.....	.....	.....
China	8,833	430	.....	1,526	.....	.....	140	427
Columbia	908	639	2	43	.....	170	.....	.....
Cuba	30	570	41	192	.....	203	372	.....
Dutch E. Indies	.....	556	.....	.....	.....	.....	.....	.....
Europe	.....	.....	139	.....	304	.....	.....	.....
Guatemala	2,088	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	.....	.....	.....	.....	.....	.....	54
Italy	.....	.....	.....	681	.....	.....	.....	.....
Japan	1,896	66	.....	8,908	10,884	.....	153	16,933
Java and Madura	.....	.....	.....	339	.....	.....	.....	.....
Mexico	82	442	59	930	265	447	34	337
Netherlands	.....	.....	.....	.....	.....	.....	.....	32
Norway	.....	144	.....	.....	.....	.....	.....	.....
Peru	93	.....	.....	77	97	.....	63	.....
Philippine Islands	989	.....	.....	349	743	286	170	.....
United Kingdom	.....	.....	.....	.....	445	.....	1,310	58
Uruguay	.....	.....	.....	125	.....	.....	.....	.....
Venezuela	9	.....	.....	2	.....	.....	.....	.....
	23,174	11,097	8,947	19,668	17,552	4,952	8,093	29,376

News of Societies

THE materials handling division of the American Society of Mechanical Engineers has announced its first national meeting to be held at the Hotel Benjamin Franklin, Philadelphia, April 23-24. Some 2000 engineers are enrolled in this division, which is one of 16 professional divisions of the society. The group has been particularly active in encouraging and presenting better handling methods and is the only organization covering the entire field. The tentative program for the Philadelphia meeting is as follows:

Monday, April 23

MORNING

Foundry session. Papers on handling systems in steel and cast iron foundries.

AFTERNOON

Plant visitation.

EVENING

Dinner meeting. Speakers of national prominence.

Tuesday, April 24

MORNING

External handling and transport session. Papers on handling of material at railroad terminal, door to door distribution and marine terminal handling.

AFTERNOON

Interior and bulk handling session. Papers on interior handling, production control by handling and exterior bulk handling at plants and terminals.

EVENING

Mechanization of coal mines session. To be conducted jointly with National Coal association and Philadelphia section of American Institute of Mining and Metallurgical Engineers.

* * *

Holds First Regional Meeting

The first of a series of regional meetings of manufacturers, distributors and salesmen of mechanical power transmission equipment was conducted by the Power Transmission association at the Poor Richard club, Philadelphia, early in February. More than 100 attended the meeting. The purpose of the meeting was to acquaint all members of the industry and their representatives with the aim and scope of the association and to promote the most efficient and economical distribution of power. At a meeting of the executive committee plans were laid for a membership campaign. The next regional meeting will be held in Chicago.

* * *

Announce Welding Program

A tentative program has been announced for the annual meeting of the American Welding society which is to be held at the Engineering Societies building, New York, April 25-27. Committee meetings are scheduled for April 25, the pressure vessels committee in the morning and the structural steel welding committee in the afternoon. The morning session of April 26 will open with the annual business meeting and election of officers and will be followed by a technical session at which welding of the Ford car will be discussed.

Procedure standardization in welding, including qualifications of welders, inspection and supervision, is the subject for the afternoon session. A number of committee reports will be presented. A stag dinner will be served in the evening. On the morning of April 27 the board of directors will meet and in the afternoon the American bureau of welding will conduct its annual meeting.

* * *

Electric Heating Is Topic

One session of the spring meeting of the American Electrochemical society, which is to be held at Hotel Stratfield, Bridgeport, Conn., April 26-28, will be devoted to industrial electric heating. This session, on the morning of April 27, is to be held jointly with the National Electric Light association. A new film on "Electric Heat in Industry," showing the uses of electric heat in large industrial plants, will be presented.

Immediately following this session, Dr. B. D. Saklatwalla, chairman of the electrothermic division of the society, will preside at an informal round table discussion which will have for its topic, "Refractories for Electric Brass Melting." The fall meeting of the society will be conducted in Charleston, W. Va., Sept. 20-22, and will have for its general theme, "Chemical Reactions at 1000 Degrees Cent. and Above."

* * *

Export Managers to Meet

According to an announcement, the Export Managers club of New York will hold its eighth annual meeting at Hotel Pennsylvania, New York, March 20. This one-day convention will consist of a morning and afternoon session and a dinner in the evening. The morning session will be devoted to the discussion of three topics: 1.—New export methods; 2.—Use of aviation in expanding foreign trade; and 3.—Cables, international telephony and radio. At the afternoon session the topics will be: 1.—Budgetary control of export business; 2.—Export sales quotas; and 3.—Use of motion pictures in promoting foreign sales.

The Export Managers club has a membership of more than 400 and the annual convention is open to anyone interested in foreign trade. The attendance at the 1927 convention exceeded 750 from 20 different states and foreign countries.

* * *

Plan Oil Burner Meeting

One of the important topics to be discussed at the fifth annual convention of the American Oil Burner association to be held at Hotel Stevens, Chicago, April 3-5, will be plans for co-operation between oil producers and electric light and power companies in serving the users of oil heating apparatus. Two sessions for manufacturers will be devoted to engineering, organization and management problems and two dealer sessions to organization, management, sales and service.

Through the courtesy of the bu-

Convention Calendar

March 19-21—Concrete Reinforcing Steel Institute. Fourth annual meeting at Edgewater Gulf hotel, Biloxi, Miss. M. A. Beeman, Tribune Tower, Chicago, is secretary.

March 20—Export Managers Club of New York. Eighth annual meeting at Hotel Pennsylvania, New York. Oren O. Gallup, 233 Broadway, New York, is secretary.

March 20-23—American Society for Testing Materials. Group committee meetings at Mayflower hotel, Washington. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

April 3-5—American Oil Burner association. Fifth annual convention and exposition at Hotel Stevens, Chicago. Leod D. Becker, 350 Madison avenue, New York, is executive secretary.

April 19-21—American Gear Manufacturers' association. Spring meeting at Hotel Seneca, Rochester, N. Y. T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary.

April 23-24—American Society of Mechanical Engineers. First national meeting of materials handling division at Hotel Benjamin Franklin, Philadelphia. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

April 25-26—National Metal Trades association. Annual meeting at Hotel Astor, New York. J. E. Nyhan, Peoples Gas building, Chicago, is secretary.

April 25-27—National Foreign Trade Council. Fifteenth national foreign trade convention at Rice hotel, Houston, Tex. O. K. Davis, 1 Hanover Square, New York, is secretary.

April 25-27—American Welding society. Annual meeting at Engineering Societies building, New York. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

April 26-28—American Electrochemical society. Spring meeting at Hotel Stratfield, Bridgeport, Conn. Dr. Colin G. Fink, Columbia university, New York, is secretary.

reau of mines, the motion picture, "The Story of Petroleum," will be shown. Development of oil burner equipment will be illustrated during the convention by exhibits of materials entering into the manufacture, installation and use of oil burners.

* * *

Joint Committee to Meet

Twenty-nine committees and joint committees of the American Society for Testing Materials will hold meetings at the Mayflower hotel, Washington, March 20-23 in conjunction with a four-day group meeting. Among the committees which will meet at this time are the following: A-1 on steel; A-2 on wrought iron; A-3 on cast iron; A-4 on heat treatment of iron and steel; A-5 on corrosion of iron and steel; A-6 on magnetic properties; A-8 on magnetic analysis; B-3 on corrosion of nonferrous metals and alloys; D-1 on preservative coatings for structural materials; sectional committee on zinc coating of iron and steel; D-5 on coal and coke; subcommittee 1V, D-14, on testing of wire screen cloth; and sectional committee on cast-iron pipe.

* * *

Export Merchandising Is Topic

Three of the seven sessions of the fifteenth national foreign trade convention of the National Foreign Trade council which is to be held at Houston, Tex., April 25-27, will be devoted to the topic of export merchandising. This, is is said, will comprise the most comprehensive and expert presentation of the subject ever put on at one meeting. Other subjects mentioned in the tentative program just issued are ship channel inspection and Latin-American trade.

Among addresses scheduled are the following: "The Prospect in Europe," by George P. Auld, Haskins & Sells, New York, and formerly accountant-general of the reparations commission; and "Foreign Trade Progress," by James A. Farrell, president, United States Steel Corp.

* * *

Expands Steel Committee

The National Association of Purchasing Agents has expanded its iron and steel committee C-3 from one of a few members to one comprising 21 members. As now constituted the committee is divided into five geographical regions with the members in each reporting to the regional chairmen. These five regional chairmen in turn report to the national chairman who is C. R. Ramage, Diamond Chain & Mfg. Co., Indianapolis.

Briefly the functions of the committee are as follows: To further advance interest and use of standard specifications for iron and steel scrap; to urge organized producers and distributors of pig iron to co-operate in perfecting and indorsing the pig iron contract and to aid in promoting its use; to furnish reliable information on iron and steel to headquarters; and to co-operate with the department of commerce and trade associations in improving conditions in the iron and steel field.

* * *

Schedule Refractories Meeting

Announcement is made that the annual meeting of the American Refractories institute will be held at White Sulphur Springs, W. Va., May 16-17. Details of the meeting will be given out later.

* * *

Arrange Machine Shop Meeting

The Chicago section of the American Society of Mechanical Engineers will hold its annual machine shop practice meeting this year in the Morrison hotel, Chicago, March 14, with both afternoon and evening sessions scheduled.

Several papers dealing with shop management and manufacturing methods will be presented. Speakers and their subjects for the afternoon session are J. A. Marland, engineer of the W. A. Jones Foundry & Machine Co., Chicago, "Development of Fully Enclosed Gear Drives for Industrial Speed Reduction"; H. L. Blood, chief of the machine design division, Western Electric Co., Chicago, "Special Machinery for Mass Production"; and K. R. Wood, production manager, Bell & Howell Co., Chicago, "Stopping Production Leaks Through a Simplified Production Control".

The evening session will include two papers, one by John P. Kelly, sales manager of the A. O. Smith Corp., Milwaukee, whose subject will be. "The Production of Pressed Steel Frames by Automobile Machinery"; and Dr. J. Becker, chief research chemist of the Vacuum Can Co., Chicago, whose talk will be on "The Relation of Chromium Plating to Industries, and The Truth About Its Value and Application."

Industrial motion pictures also will be shown, one of which will illustrate production methods used in making the new Model A Ford car.

Here and There

(*Concluded from Page* 607)

the board, M. F. Gartland, Toledo, O.; president, J. J. Carroll; vice president and general manager, J. E. Carroll; secretary and treasurer, John C. Haswell.

* * *

AMHERST FOUNDRY CO. LTD., and Charles Fawcett Ltd., both of Montreal, are in process of being merged by Montreal financial interests. The former was established in 1887 and the latter in 1860. Their products consist of stoves, ranges, furnaces and enamel and porcelain goods.

* * *

ST. JOSEPH ELECTRICAL STEEL CASTINGS CO., St. Joseph, Mich., James P. McKeown, president, recently formed, is installing an electric furnace for production of steel castings. Initial capacity will be about 200 tons per month. Two similar units are planned for installation shortly.

* * *

CARTER-STRITE CO., Minneapolis, manufacturer of automatic bacon grills, has bought a three-story plant and will move there shortly, increasing its production greatly. An automatic domestic grill will be added to the line. C. W. Carter is president, Fred A. Wirth vice president, Miles W. Carter secretary, and George R. Murray treasurer.

* * *

ANDERSON ENGINE & FOUNDRY CO., Anderson, Ind., has re-elected officers, as follows: President, E. W. Cooney; vice president, Luther F. Pence; secretary-treasurer, I. E. May; assistant secretary, Mary Healey; directors, Emerson McGriff, Portland, Ind., Harold Taylor, Indianapolis, Frank C. Hesch, Hadgetsville, Pa., Thomas Curry, Muncie, Ind.

* * *

MECHANICAL DEVICES INC., Boston, recently incorporated, will manufacture a new type of cotter pins, nuts and screws. It has bought the Strathmore Mills plant at Concord Junction, Mass. Present offices are at 260 Tremont street, Boston. Watson Hartley is president, Edwin O. Childs vice president, and T. Walter Sharpe treasurer. Directors include these officers and C. A. Hahn, Arthur S. Hamilton and G. Hollis Blake. L. S. Hooper is plant manager.

Machinery

Better Buying Expected in March with Greater Automotive Activity and with Current Lists Expanded—Crane Orders Light

WHILE it is doubtful if machine tool and equipment sales for the whole country increased in February over January, certain centers made appreciable gains. In the Cleveland and Detroit territories, at least, greater activity in the automotive lines has furnished sufficient business to turn the tide of orders. Four of the large automobile manufacturers have placed orders in the last week and prospects for further business are good. Sales records of New York, Pittsburgh and Chicago are either about equal or slightly below the levels for the previous month. Numerous inquiries are pending and several interests which have lists standing have called for additional items. March, therefore, is expected to be considerably more active than the past two.

New York, Feb. 28.—While machine tool buying in this district is far from brisk, there nevertheless is a moderate volume of business. Among larger recent buyers is the Wright Aeronautical Corp., Paterson, N. J., which has closed on four 3-foot radial drills, a lathe and two milling machines. Delaware, Lackawanna & Western railroad has purchased a gap lathe and another lathe, although it is understood no action has yet been taken on the list issued a few weeks ago. General Electric Co., Schenectady, N. Y., has withdrawn its inquiry for a 12-foot planer, supplying this machine from one of its plants. This interest has a number of machines pending, and now is continually bringing out additional specifications. At the same time, its purchases over the past few weeks have been substantial. New York Central is adding new machines to its pending list. Crane inquiry continues good, but orders continue to lag. It is expected that the next month will see material improvement in buying.

Pittsburgh, Feb. 28.—With several machine tool dealers here, February has proved to be a much better selling month than February a year ago. Hopes for March, however, are brighter than last year at this time. One or two report their total sales for the month on practically the same level. A great many inquiries are pending, and the trade is hopeful that manufacturers will reach decisions within the next month which will help out their aggregate business for the quarter. Some woodworking equipment has been purchased by Carnegie Steel Co. for Edgar Thompson works, and a few metalworking tools are yet to be bought. Koppers Co. still is negotiating for the machine tools on its list noted last week. Several other tentative lists are in process of formation, including, it is thought, one for Pittsburgh Plate Glass Co., Ford City, Pa. Two or three unidentified crane inquiries are current, but awards are rare.

Chicago, Feb. 28.—Inquiry for machine tools in this district has been disappointing during the week, but fairly active industrial buying is reported. It is believed that the machine tool buying of February will fall slightly under the January volume. Activity continues strong in used tools. Milwaukee district is showing more activity in new tools than is the case in the immediate Chicago territory. Chain Belt Co., Allis-Chalmers Mfg. Co., A. O. Smith Corp., and several others have purchased a number of tools. T. L. Smith Co. has part of its list outstanding, amounting to about $40,000. Users in the Chicago district have purchased three punch presses, several friction saws, die shop tools, and specialty machines. A Green Bay, Wis., manufacturer purchased a milling machine, and another was sold to a Maywood, Ill., industrialist. A traverse City, Mich. manufacturer has purchased a screw machine in this district. Inquiries are out for a 30-inch lathe and a 30-inch planer. The Santa Fe again has added to its recent lists with an inquiry for a motor-driven double-dry emery grinder, and a welding machine. No other railroad inquiry has appeared.

Worcester, Mass., Feb. 28.—Demand for machine tools continues moderately active, but still inclined to be spotty. Group buying is absent with the exception of electrical industry which has taken a list of tools for New England. This business is said to have been distributed. The call for grinding machinery is steady. Several sales of individual units are reported, including a radial drill, several milling machines, a borer and a split list of various sized lathes. Textile machinery has lagged in spots, but a New Bedford fabric mill will be in the market soon for considerable new equipment for installation in that city and Fall River. Small tools are also active.

Cleveland, Feb. 28.—Cleveland and Detroit machine tool dealers have enjoyed good business during the last week as a result of increased activity of automobile manufacturers. At last four Detroit car builders have purchased sizable lots of equipment. For most dealers February business was as good as in January and in some case far better. With additional automotive needs pending, March is expected to prove a good month. Tool manufacturers report a pick-up in orders during the last week and find February business about on a par with the month before. Current inquiries are not heavy but develop regularly and turn to orders without great delay.

CRANE ORDERS PLACED

Two 10-inch used cranes for Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., to Niles Crane Corp.

Among single orders were: 5-ton electric crane for Concrete Steel Co., New York, to Niles Crane Corp.; 20-ton handpower crane for Standard Oil Co. of New Jersey for installation at Bayway, N. J., to Box Crane & Hoist Corp.; 25-ton used locomotive crane for New York Central railroad to unnamed seller; 10-ton electric crane for F. L. Smidth Co., New York, for installation in the West, placed, contract reported going to Harnischfeger Corp.; 150-ton 6-motor crane for Phoenix Utility Co., New York, to Cleveland Crane & Engineering Co.

CRANE ORDERS PENDING

10-ton used electric crane for Nicetown Plate Washer Co., Philadelphia; bids asked.

6-ton horizontal revolving boom type crane equipped with 1-yard heavy clamshell bucket, for Multnomah county commissioners, Portland, Oreg.; bids closed Feb. 27.

Re-equips Welding School

The school of welding operated by the Lincoln Electric Co., Cleveland, recently has been reorganized and re-equipped. Its purpose is to train electric arc welders and although instruction represents a considerable expense, no tuition or fees are charged. The course consists of 12 lessons given in a 30-day period. The lessons cover contact of the arc—its characteristics and manipulation, nature of welding rods and depositing materials, operation and care of welding machines, nature of vertical and overhead welding, testing, various applications of welding to cast iron, copper and bronze, as well as to steel. The pupils in the school are under the direction of a trained instructor who teaches them both as a class and as individuals. The educational work comes under the general direction of A. F. Davis, vice president.

Starts Work Extension

Construction of the building to house the new 100-ton open-hearth furnace and overhead equipment for two additional units at the Riverside division of the Otis Steel Co., Cleveland, will be undertaken by the Wellman-Seaver-Morgan Co., Cleveland. The new extension to the present open-hearth structure will be 163 x 252 feet and will require 2000 tons of structurals.

November shipments of porcelain plumbing fixtures were 21,825 pieces, as reported by ten manufacturers to the department of commerce.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BALTIMORE—Davison Chemical Co. has awarded the contract for a plant 60 x 126 feet to the Austin Co., Cleveland.

BALTIMORE—Automotive Corp. of America, V. P. Williams, vice president, plans to build a plant for the manufacture of a patented parkmobile.

AUBURNDALE, MASS.—Abramson & Bennett, Taylor building, are inquiring for miscellaneous tools and equipment for proposed repair and service garage to be built at Auburn and Lexington streets.

BOSTON—Schoolhouse division of the department of education is inquiring for metalworking lathes, also metalworking, milling and woodworking machinery for Continuation school on Common street.

FITCHBURG, MASS.—Independent Lock Co., 78 Winter street, M. Falk, president, will build a 2-story plant, 40 x 150 feet.

WORCESTER, MASS.—New England High Carbon Wire Co. has started work on a new plant addition 60 x 160 feet, at Millbury. Harold L. McLaren is contractor.

WORCESTER, MASS.—Worcester Electric Light Co. has acquired a tract of 7000 square feet on Winfield street here and will erect a distributing substation on the site.

AUDUBON, N. J.—Audubon Wire Cloth Co. plans to build a 2-story plant addition, 55 x 94 feet.

CAMDEN, N. J.—Safety Equipment Corp. has been incorporated with $100,000 capital to manufacture safety devices by Samuel P. Orlando, Camden, attorney.

NEWARK, N. J.—Mapes & Sprowl Steel Co., 227 High street, maker of metal products, will move its plant to space recently acquired on Empire street, in a 1-story building.

PASSAIC, N. J.—Paterson Welding Co. has been incorporated with $50,000 capital by Albert Comstock, Paterson, attorney.

PASSAIC, N. J.—Accurate Engineering & Mfg. Co. has been incorporated with $100,000 capital to manufacture electrical machinery by Betz & Stein, Passaic, attorneys.

TRENTON, N. J.—John A. Roebling's Sons Co., W. A. Anderson, treasurer, will build a new rod mill at Roebling, N. J. The architect has not been selected as yet.

BATH, N. Y.—American Electra Corp. has been incorporated with $50,000 capital to manufacture machinery, by F. W. Annabel, Bath, attorney.

BROOKLYN, N. Y.—Mansfield Iron Works, 878 East Forty-third street, plans to build a new plant on recently acquired property.

BROOKLYN, N. Y.—Riteservice Iron Works has been incorporated with $10,000 capital by L. D. Cohen, 1705 Pitkin avenue, attorney.

BROOKLYN, N. Y.—East New York Bed Spring Co. has been incorporated with $5000 capital to manufacture and deal in bed springs, by I. Ehrlich, 695 Rockaway avenue, attorney.

BROOKLYN, N. Y.—Daisy Electrical Mfg. Corp. has been incorporated with $100,000 capital to manufacture refrigerators by I. L. Rosenson, 259 Broadway, attorney.

BROOKLYN, N. Y.—N. & T. L. Iron Works has been incorporated with 200 shares no par value stock by Rosenson & Lorence, 291 Broadway, attorneys.

BROOKLYN, N. Y.—Pollack & Fischer has been incorporated with $20,000 capital to manufacture and deal in iron and steel by P. Silberman, 261 Broadway, attorney.

ELMIRA HEIGHTS, N. Y.—R. G. Jennings Yarn Cleaning Machinery Co. has been incorporated with 1000 shares no par value stock by Baldwin & Allison, Elmira, attorneys.

LONG ISLAND, N. Y.—Fairchild Aviation Corp. has awarded the contract for a 1-story building, 180 x 420 feet, for the manufacture of airplanes, to Austin Co., Cleveland.

MT. VERNON, N. Y.—Ward Leonard Electric Co., South street, manufacturer of controllers and other electrical equipment, has awarded the general contract for a 1-story plant addition 115 x 116 feet, to John W. Ferguson Co., Paterson, N. J.

NEW YORK—Trinity Iron Works has been incorporated with $5000 capital by M. Jablow, 120 West Forty-second street, attorney.

NEW YORK—P. & S. Iron Works has been incorporated with $5000 capital by L. W. Easton, Municipal building, attorney.

NEW YORK—Marko Machine Co. has been incorporated with $10,000 capital to manufacture and deal in fixtures, by J. P. Shulman, 288 Grand street, attorney.

NEW YORK—H. Meidenberg & Co. has been incorporated with $25,000 capital to manufacture and deal in machinery by A. Palmer, 2 Lafayette street, attorney.

NEW YORK—Ames Pump Co. has been incorporated with 1000 shares no par value stock to manufacture and deal in machinery, by H. W. Baird, 66 Broadway, attorney.

NEW YORK—Consolidated Laundry Machinery Corp. has been incorporated with $10,000 capital by Coller & Coller, 277 Broadway, attorneys.

NEW YORK—Ideal Electric Plating Works has been incorporated with $20,000 capital by M. N. Ginsberg, 331 Madison avenue, attorney.

NEW YORK—R. L. Simon has been incorporated with $20,000 capital to manufacture and deal in machinery by Schneider, Groggins & Hyman, 1440 Broadway, attorneys.

NEW YORK—Leonard Burner Corp. has been incorporated with 600 shares no par value stock to manufacture and deal in oil burners, by T. Gregory, 72 Wall street, attorney.

NEW YORK—Sanitary Postage Service Corp., 285 Madison avenue, maker of stamp vending machines, has increased its capital stock, with the intention of carrying out an expansion program.

NEW YORK—Van Hoesen Mfg. Corp. has been incorporated with 150 shares no par value stock to manufacture automobile accessories by J. McLaren, Tribune building, attorney.

SCHENECTADY, N. Y.—J. V. Wallace Co. has been incorporated with $10,000 capital to manufacture and deal in machinery by J. E. Scully, Albany, attorney.

BERWICK, PA.—Fire caused considerable damage to the shear house of the rolling mill at the plant of the American Car & Foundry Co. here.

GLASSPORT, PA.—Pittsburgh Steel Co.'s plant here contemplates expansion.

MIDLAND, PA.—Mackintosh-Hemphill Co.'s foundry equipment was damaged by fire recently. Motors, cranes and other electrical equipment suffered most.

PHILADELPHIA, PA.—Perry-Buxton-Doane Co.'s scrap iron buildings were damaged by fire recently.

PHILADELPHIA—Edward H. Reuss Jr., Thirtieth and Race Streets, manufacturer of

Resale News

ASSETS of Gehret Bros. Inc., Bridgeport, Conn., will be sold at auction at a date to be set by the United States district court. The company deals in iron and steel products, and has been in the hands of a receiver for some time. Bridgeport Iron Works has been formed to take over the old company at private sale but legal obstacles prevented and public sale is found necessary. The receiver is to continue the business until May 1, to complete contracts now in hand.

Sales Calendar

April 3—Plant and equipment of Bilton Machine & Tool Co., Bridgeport, Conn., to be sold at public auction by the receiver.

pipe, heating equipment, etc., will build a 1-story pipe bending plant.

PHILADELPHIA—Brown Instrument Co., Roberts and Wayne avenues, maker of pyrometers and other measuring instruments plans to build a 2-story plant addition.

PHILADELPHIA—Harry A. Whartenby Inc. has been incorporated with $50,000 capital to manufacture and deal in iron and steel, by Marie F. Whartenby, 325 East Horter street, Philadelphia.

PITTSBURGH—Bailey-Farrell Mfg. Co., Twentieth and Sidney streets, contemplates rebuilding that part of its branch plant at Second avenue and Ninth street, recently damaged by fire.

PITTSBURGH—Service Body Sales Co. has been incorporated with $5000 capital to manufacture and deal in automobiles, automobile bodies, etc., by William H. Coslett Jr., 911 Adelaide street, Pittsburgh.

PROVIDENCE, R. I.—Bourdon Aircraft Corp. has been granted a charter for the manufacture of airplanes, hydroplanes and motorboats. Incorporators are Charles L. Ayling, Allen P. Bourdon, Clifton B. Thompson and others.

East Central

BELLEVILLE, ILL.—Original Enamel Range Co., Industrial place and Lebanon avenue, has been incorporated with $30,000 capital to manufacture and deal in stoves, ranges and kindred products, with Charles P. Hamil, Belleville Bank & Trust building, Belleville, correspondent.

CHICAGO—American Ventilating Co., 228 North LaSalle street, plans to build a 1-story plant addition, 70 x 103 feet.

CHICAGO—Johnson Sheet Metal & Furnace Works, 712 West Seventy-ninth street, will build a 1-story shop, 37 x 121 feet.

CHICAGO—Englander Spring Bed Co. will lease part of a building to be built at Pershing road and Lowe avenue.

CHICAGO—Commonwealth Edison Co. has awarded the contract for structural steel for its Fisk station to Vierling Steel Works.

CHICAGO—Ahlberg Bearing Co., 321 East Twenty-ninth street, plans to build a plant addition.

CHICAGO—Construction Materials Co. has just moved its offices into 228 North LaSalle street.

CHICAGO—Roth Bros. & Co., 1400 West Adams street, manufacturer of dynamos, will develop a new plant in Cicero, recently acquired from the Rodgers Bros. Seed Co.

CHICAGO—Electrol Co., 1734 Builders building has been incorporated with $2000 capital to manufacture and deal in heaters, furnaces, ranges, etc., with Corporation Trust Co., correspondent.

CHICAGO—Hannifin Building Corp. will build a 2-story manufacturing plant to be leased to the Hannifin Mfg. Co., 621 South Kolmar avenue, incorporated recently, maker of machine tool equipment. (Noted Feb. 9).

CHICAGO—Weiner Pipe Organ Co., 3543 West Thirteenth place, will build a plant for the manufacture of pipe organs. Dewey & Pavlovich, 4804 North Kedzie, are architects.

CHICAGO—Lawndale Scrap Iron & Metal Co., 2840 South Kedzie avenue, has been incorporated with $50,000 capital to manufacture and deal in iron, steel, copper and other metals, with J. F. Fardy, 155 North Clark street, correspondent.

CHICAGO—Ben Koral Co., 351-63 East Ohio street, has been incorporated with $50,000 capital to manufacture and deal in automobile accessories and hardware specialties, with Grossman & Grossman, 11 West Monroe street, correspondents.

CHICAGO—Sundstrom Pressed Steel Co., 8030 South Chicago avenue, has been incorporated with $50,000 in common stock, to design, manufacture and deal in tools, dies, machines, etc., with William Olson & Co., 1180 East Sixty-third street, correspondent.

CHICAGO—Chicago Transformer Corp., 139 North Clark street, has been incorporated with $50,000 in common stock, to manufacture and deal in electrical transformers, motors, etc., with Robert H. Farrell, 139 North Clark street, correspondent.

CHICAGO—Marking Products Co., 108 North Jefferson street, has been incorporated with 250 shares no par value stock to engage in general foundry and machine shop business, with Haffenberg, Kopald & Burns, 100 West Monroe street, correspondents.

CHICAGO—Graham Corp., 4421 West Carroll avenue, has been incorporated with $15,000 in preferred shares and $35,000 in common shares, to manufacture and deal in electrical advertising devices and electrical appliances, with F. L. Steers, 38 South Dearborn street, correspondent.

EAST PEORIA, ILL.—Midwest Forge & Steel Co., 751 North Twenty-first street, contemplates enlarging its plant.

ELGIN, ILL.—Elgin Stove & Oven Co. plans to build a plant addition, 50 x 135 feet, for the manufacture of steel kitchen units, cabinets, stoves, etc.

MOLINE, ILL.—Air Craft Inc., 201 Third avenue, has been incorporated with $100,000 in common stock, to manufacture and deal in airplanes, with Curtis & Simonson, Rock Island, correspondent.

ROCKFORD, ILL.—Burd High Compression Co., will build a foundry extension 40 x 90 feet for the manufacture of high compression piston rings and gray iron castings, and has awarded the contract to the Austin Co., Cleveland.

BATTLE CREEK, MICH.—Rich Steel Products Co., C. C. Rich, president, has awarded the contract for a 1 and 2-story plant 185 x 295 feet, to be built at Marshall, Mich., for the manufacture of engine valves.

DETROIT—R. L. Spitzley Heating Co., 246 West Larned street, is inquiring for equipment including a pipe threading machine for its shop.

JACKSON, MICH.—Frost Gear & Forge Co., Horton street, has awarded the contract for a 2-story plant, 50 x 100 feet, to be built at Horton and Tyson streets.

JACKSON, MICH.—Sparks-Withington Co. is inquiring for machinery and equipment for its proposed 2-story radio manufacturing plant, 60 x 260 feet.

JACKSON, MICH.—Jackson Steel Product Co., manufacturer of auto wheel rims, has awarded the contract for a plant extension, 40 x 120 feet, to the Austin Co., Cleveland.

AKRON, O.—Goodyear-Zeppelin Corp. is considering several localities for the establishment of a dirigible manufacturing plant. A hangar about 320 x 1200 feet will be built.

CANTON, O.—Car-Van Steel Products Co., Fifth street, southwest, maker of punches, reamers and other tools, contemplates plant additions.

CINCINNATI—Meehanite Metal Engineering Corp., 907 Chamber of Commerce building, recently organized, will manufacture metal of a certain type.

CLEVELAND—Contract for a 1-story plant for the Sanymetal Products Co., manufacturer of metal partitions, has been awarded the Austin Co., Cleveland.

CLEVELAND—Enameled Products Co., Eddy road and Taft avenue, has awarded the contract for a plant addition 40 x 40 feet, to William Dunbar Co., 8201 Cedar avenue.

CLEVELAND—Steel Improvement & Forge Co., C. H. Smith, president, is inquiring for drop hammer, drill machine and die sinking machinery for proposed forge, press and die shops. (Noted Jan. 19).

DAYTON, O.—Gosite Air Machine Co., 413 West Fifth street, plans to build a 1-story plant.

MASSILLON, O.—Central Alloy Steel Corp. has awarded the contract for structural steel for its buildings, to Massillon Bridge & Structural Co.

SALEM, O.—Mullins Body Corp. plans to build a 1-story plant 50 x 300 feet, for the manufacture of automobile bodies, motor boats, etc.

Southern States

COLUMBUS, GA.—Columbus Iron Works Co., maker of stoves, parts, etc., plans to install grinding machines and other equipment.

SANDERSVILLE, GA.—Georgia Portland Cement Co. has awarded the contract for a new plant to the H. K. Ferguson Co., Cleveland. The plant will have a capacity of 600,-

Iron and Manganese Ores and Minerals

LAKE SUPERIOR ORES

Iron Ore

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 58 to 63 per cent	8.00 to 8.50
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45 to 55 per cent iron and 6 to 8 per cent manganese	10.00 to 10.50
North African low phosphorus	nominal
Swedish foundry or basic, 65 per cent	9.00 to 9.50
Spanish and North African basic, 50 to 60 per cent	8.50 to 9.00
Newfoundland foundry, 55 per cent	9.00 to 9.50

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian	36 to 38 cents
Indian	36 to 38 cents
Caucasian, 53 to 55 per cent washed	38 to 40 cents

Fluorspar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$14.50 to 14.75
Washed gravel, imported duty paid eastern tidewater, per net ton	15.50 to 16.00

000 barrels a year. Work will start at once.

MONROE, LA.—Monroe Armature Works Inc. has been incorporated by Morris S. Harrison, 606 Hall street.

GASTONIA, N. C.—Ferguson Gear Works Inc., 519 North Airline street, plans to build a new plant.

CHATTANOOGA, TENN.—Universal Pipe & Radiator Co., 41 East Forty-second street, New York, owner and operator of Chattanooga Iron & Coal Corp., this city, has increased its capital to provide for future expansion.

MEMPHIS, TENN.—Union Battery Co., 2717 South Troy street, Chicago, F. V. Brown, president, plans to establish a plant here and has leased a building at 305 West Trigg street. The plant is expected to be in operation by July 1.

DALLAS, TEX.—John E. Mitchell Co., 600 South Sixth street, plans to move its cotton gin parts manufacturing plant and will build a new building on Commerce street, East Dallas. Orville Mitchell is in charge.

Western States

JEROME, ARIZ.—United Verde Copper Co. will build a steel foundry for the utilization of waste materials.

EUGENE, OREG.—Bids will be received by the Eugene water board for furnishing machinery and equipment for the Leaburg development of the Eugene municipal power system.

PORTLAND, OREG.—Monks Humidifier Co. has been incorporated with $5000 capital by G. C. Israelson, 521 Spalding building, to conduct a brass and iron foundry and machine shop. No building plans have been announced.

SEATTLE—Olympic Foundry Co., 5200 Ninth avenue south, suffered damage to its motors, generators and switches in a recent fire.

SEATTLE—American Laundry Machine Co. of Ohio has purchased a site at Elliott avenue and Denny way, and plans to build a plant in the near future.

SEATTLE—Pacific Coast Steel Co. has awarded the structural steel contract for crane girders for its plant to Wallace Bridge & Structural Steel Co.

West Central

OSKALOOSA, IOWA—Iowa Valves Co. Inc., has been incorporated with $162,000 capital by Herman W. Read, Oskaloosa, and W. W. Corey, St. Louis, to manufacture valves and fire hydrants.

DULUTH—West End Scrap Iron & Metal Co., 1920 West Michigan street, contemplates building a new plant.

MINNEAPOLIS—C. W. Olson Mfg. Co., J. P. Murphy, secretary-treasurer, manufacturer and fabricator of structural steel, ornamental iron, fire escapes, fences, etc., will build a new 1-story plant at Thirteenth avenue and Quincy street northeast to replace the one damaged by fire recently.

ST. PAUL—Northern Pacific railway will build an addition to its repair shop at Mississippi river and York street.

CHILLICOTHE, MO.—St. Joseph Electric Steel Castings Co., recently incorporated with 27,500 shares no par value stock, will occupy half of the newly remodeled Twin City Storage Co.'s building on Langley avenue.

KANSAS CITY, MO.—Southwest Pump & Machinery Co., 2716 McGee Traffic way, recently incorporated with $25,000 capital, is altering a building which it will occupy as a plant shortly.

ST. LOUIS—Automatic Weather Strip Co. has been incorporated with $50,000 capital by Howard G. Cook, 5565 Bartner street.

ST. LOUIS—American Stove Co. is building an enameling plant addition to add 10,000 square feet of space.

BELLEFOURCHE, S. D.—Bellefourche Implement Co., maker of agricultural implements, contemplates building a new plant.

Canada

TORONTO, ONT.—Canadian Industrial Development & Finance Ltd. has been incorporated to manufacture and deal in iron, steel, brass and metal goods, with 50,000 shares no par value stock by Robert I. Ferguson, Regina Lacarte, and Nina M. MacBean.

TORONTO, ONT.—MacB. Accessories & Service Ltd. has been incorporated to manufacture and deal in machinery and automobile accessories, with $75,000 capital by Oscar M.

Poucher, Alfred J. Bell, and Myrtle V. Poucher.

TORONTO, ONT.—De Haviland Corp. plans to establish an assembling plant at Leaside, Ont., for manufacture of airplanes. At first parts will be shipped from England and assembled here, but later it is understood that a manufacturing plant will be established. The proposed plant will be located on the edge of the aerodrome in close proximity to the hangars soon to be occupied by the Toronto Flying club.

SAULT STE. MARIE, ONT.—Great Lakes Power Co. will start work at once on a power plant on the Montreal river. It is estimated that 25,000 horsepower can be developed. Lang & Ross Ltd., and George Kohl, engineers, Sault Ste. Marie, Ont., will make the survey.

WELLAND, ONT.—Horton Steel Co. will build an addition to its plant at Bridgeburg this spring. The plant will be 93 x 306 feet.

WELLAND, ONT.—Standard Steel Construction Co., 55 Main street east, will build addition to its plant here to be 1½ stories, 30 x 50 feet, corrugated iron and steel beam construction.

WINDSOR, ONT.—Hyatt Jumbo Roofing Co. Ltd. has been incorporated to carry on the business of roofer and contractor, and to manufacture and deal in roofing and builder's supplies with $150,000 capital by Wilbert J. Hyatt, Wilfrid D. Roach, and Ross M. Riddell.

WINDSOR, ONT.—P. McConnell, Pitt street west, plans to build a machine shop on Tuscorora street, to be 60 x 80 feet, concrete block and brick construction. Machinery and equipment for plant to be purchased later.

LORETTEVILLE, QUE.—Bids will be called at once by the municipal council for the construction and installation of waterworks and sewage plants and systems.

MONTREAL, QUE.—General Bronze Corp. of Canada Ltd. has been incorporated to manufacture and deal in bronze, brass, iron and steel products, with $50,000 capital by James A. Mathewson, Arthur I. Smith and Ethel M. Pierce.

MONTREAL, QUE.—Rhodes Canada Ltd. has been incorporated to carry on a business as iron founder and manufacturer of iron and woodworking tools, and machinery with 9000 shares no par value stock by Edward J. Waterson, Jacques Senecal, and William H. Wilson.

MONTREAL, QUE.—National Power & Development Ltd. has been incorporated with 1,000,000 shares no par value stock, by Joseph Burke, Percy W. Dunbar and John F. Turner.

MONTREAL, QUE.—Continental Aero Corp. Ltd. has been incorporated to manufacture airplanes, airplane engines, etc., with $50,000 capital by George B. Brown, Brinley V. Lewis and Tom Gould.

MONTREAL, QUE.—Hyde & Miller, 1500 Guy street, have the contract for a foundry here for the Canada Tube & Steel Products Ltd., 107 Hamilton street. Building to be 1-story, 80 x 120 feet.

EASTEVAN, SASK.—Northern Light & Power Co. is planning a power development plant. Present plans call for the erection of a plant near here where power can be developed from lignite coal. Power developed from this source will supply a large area in the southeastern section of Saskatchewan.

INDIAN HEAD, SASK.—Northern Light & Power Co. Ltd. has been incorporated to carry on the business of a light, heat and power company with $250,000 capital and 10,000 shares no par value stock by Murdock A. MacPherson, Everett C. Leslie, and Ruth M. Benson.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality	
Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00
Second Quality	
Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., and East Chicago, Ind.	52.00
Birmingham	51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Per Net Ton Chester, Pa. and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK

Per Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

New Trade Publications

COOLING COILS—Semet-Solvay Engineering Corp., New York, has issued a leaflet featuring cooling coils for by-product coke ovens.

EXCAVATORS—Hanson Clutch & Machinery Co., Tiffin, O., has issued a catalog of its excavating machinery, with illustrations, description and specifications.

RESISTORS—Monitor Controller Co., Baltimore, is circulating a bulletin on its various types of electric resistors. It is illustrated and data aid in selecting the type for any given use.

CAR DUMPERS—Rotary car dumpers manufactured by the Roberts & Schaefer Co., Pittsburgh, are described in a current bulletin by that company. It is illustrated to show a variety of uses in mines and quarries.

ELECTRIC MOTORS—Lincoln Electric Co., Cleveland, has issued a bulletin on the starting and operating characteristics of its switch-start motor. Charts of current consumption illustrate it.

CHUCKS—Westcott Chuck Co., Oneida, N. Y., in a current bulletin, gives results of use of its chucks to increase production rates. It is illustrated with halftones of various types of chucks made by the company.

DRUM CONTROLLERS—General Electric Co., Schenectady, N. Y., in a current bulletin, presents a line of drum controllers for series and compound-wound motors used on crane hoists and similar applications. It is illustrated.

NICKEL ALLOY STEEL—International Nickel Co., New York, has issued a revised buyers' guide. It contains a list of sources from which the company's products may be obtained. The sources are presented under product headings.

STEEL RULE—Hiram A. Farrand, Berlin, N. H., has issued a leaflet describing a steel rule, six feet long, coiled in a case for the pocket. It has sufficient stiffness to keep its alignment in use, with elasticity to allow it to be coiled in small space.

MONEL METAL—International Nickel Co., New York, has compiled an attractive book outlining its methods for backing up users of this material by general and trade advertising to create general knowledge of the metal. The plan is explained in detail and copious illustrations are given.

TANKS—Sisterville Tank & Boiler Works, Sisterville, W. Va., has issued a catalog of its tanks for filling station, bulk station, pressure oil field, fuel oil and other liquid storage purposes. They are built in welded and riveted-welded types of a wide range of sizes. Tank accessories are also shown.

MAGNETIC PROTECTION—A book by Cutler-Hammer Mfg. Co., Milwaukee, describes the company's magnetic separator pulleys. It describes design and construction of these pulleys. Tables give cubic feet per hour capacity of all sizes and correct width and thickness of belts to be used.

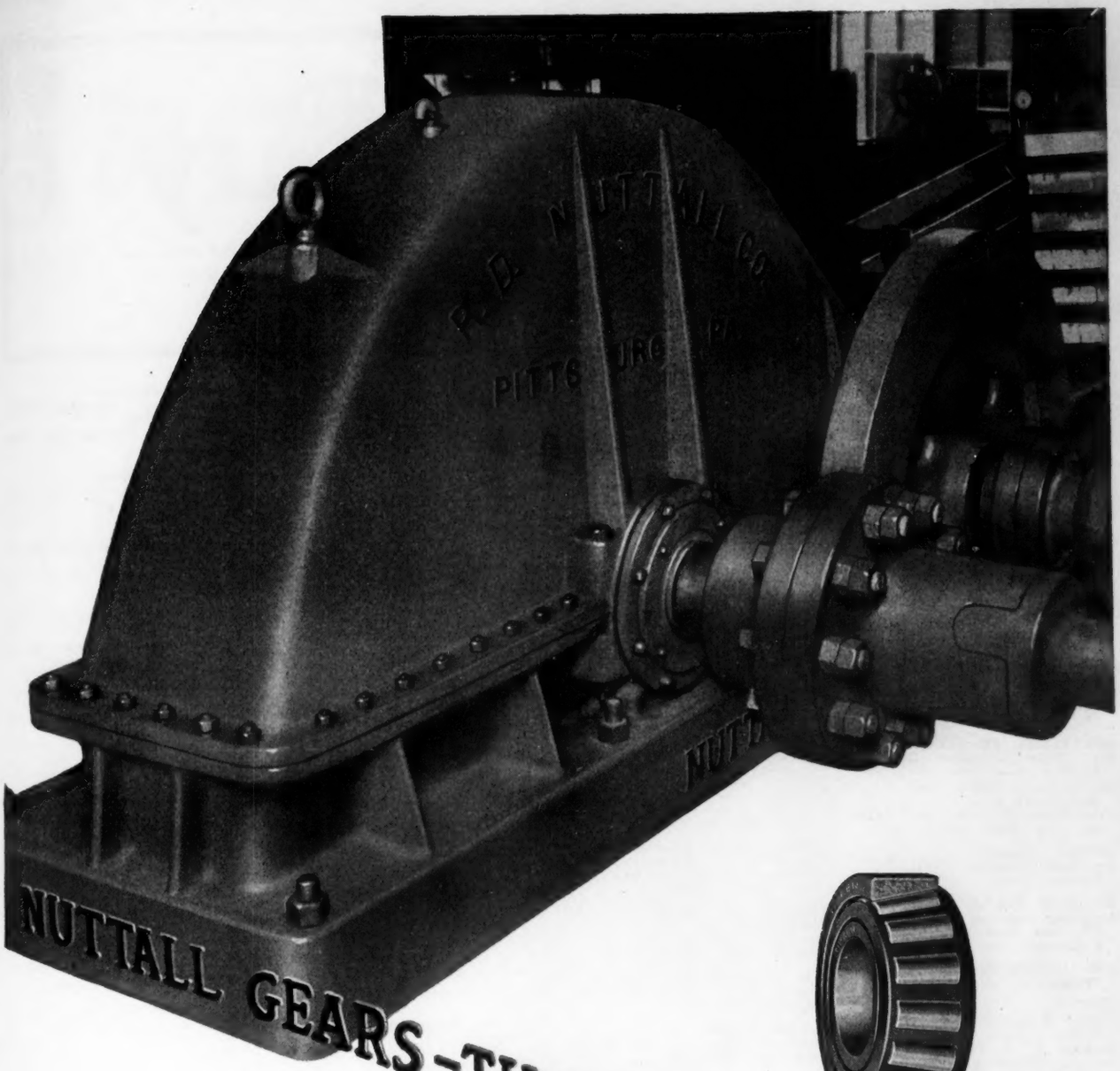
ROLLER BEARINGS—Rollway Bearing Co. Inc., Syracuse, N. Y., has issued a catalog of its wide series and utility type of bearings. It is illustrated and contains engineering data on bearings of this type. A number of bulletins are also being circulated covering various of the company's products.

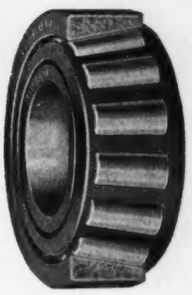
CHAIN DRIVES—Morse Chain Co., Ithaca, N. Y., has prepared a handbook on chain drives covering the subject of silent chain power transmission to facilitate selection and design of proper drive for various requirements. Tabular matter gives data. A section is devoted to illustration and description of chain drives on various types of industrial machinery.

TURBINE COMPRESSORS—Garden City Fan Co., Chicago, in a current bulletin, describes its cycloidal turbine compressors, illustrated by charts of performance at constant and varying speeds and halftones of the compressors. The compressors are used in connection with oil and gas-burning equipment for agitating liquids and other purposes where pressures of one to five pounds are required.

SAND MIXERS—Standard Sand & Machine Co., 5151 St. Clair avenue, Cleveland, has issued a looseleaf booklet describing its line of sand mixers. Recent changes include a drive through a speed reducer, antifriction bearings, a new type of screen, and a vertical lift elevator. The booklet also gives information on the installation and care of sand mixing machinery, dimensions and capacities, reproductions of photographs of various parts and plan drawings of the equipment.

STEEL FLASKS—Shanafelt Mfg. Co., Canton, O., has issued a booklet describing one piece steel flasks. Since all flasks made by that company are built to order, designed and arranged to suit the work for which they are intended, the illustrations reproduced in the booklet are only suggestive of the combinations and arrangements that may be furnished. Mention also is made of special steel bottom plates, bands, jackets, stamp flasks, and flask tin.





-TIMKEN-EQUIPPED

THE power from the electric drive is transmitted to a piercing mill through this Nuttall reduction gear, of the single helical type. In accordance with widely proved Nuttall practice, Timken Bearings are fitted to the pinion shaft and gear shaft. Consequently a higher percentage of the input is transmitted, lubrication is greatly simplified, and alignment is most nearly permanent. For the ever-present thrust load is rendered harmless, along with shock, radial load and friction. There is more all-around load area and much longer life in the exclusive combination of Timken tapered construction, Timken-made electric steel, and Timken *POSITIVELY ALIGNED ROLLS.*

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertisers and by referring to advertisement you can get full particulars about products.

ABRASIVE (Polishing)
Norton Co., Worcester, Mass.

ACCUMULATORS
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Air Reduction Sales Co., 342 Madison Ave., New York City.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th and Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Annealing Box Co., 801 Beaver Ave., N. S., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

ARCHES
Big Savage Fire Brick Co., The, Frostburg, Md.

ARCHES (Suspended)
Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.

ARCHITECTS (Industrial)
Austin Co., The, 16112 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, O.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.
American Welding & Mfg. Co., The, Warren, Ohio.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Alloy)
Central Alloy Steel Corp., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.

BARS (Concrete Reinforcing)
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Nicetown Plate Washer Co., Inc., Juaniata, Clarissa Sts., Nicetown, Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BARS (Iron and Steel)
Andrews Steel Co., The, Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.

BARS (Sheet)
Hausman & Wimmer Co., The, First National Bank Bldg., Pittsburgh, Pa.

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Alloy Steel Corp., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Keystone Drawn Steel Co., Spring City, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS, STEEL (Electric Furnace)
Timken Roller Bearing Co., The, Canton, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Phoenix Iron Co., The, 20 So. 15th, Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BEARINGS (Ball)
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Hyatt Roller Bearing Co., Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Motor)
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Tapered Roller)
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BENCH LEGS (Steel)
Lupton's, David, Sons Co., 2225 Allegheny St., Philadelphia, Pa.

BENCHES AND FRAMES (Drawing)
Morgan Construction Co., Worcester, Mass.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Kopper Construction Co., The, Union Trust Bldg., Pittsburgh, Pa.

BILLETS (Alloy and Carbon Steel)
Andrews Steel Co., The, Newport, Ky.
Central Alloy Steel Corp., Massillon, O.
Hausman & Wimmer Co., The, First National Bank Bldg., Pittsburgh, Pa.
Washburn Wire Co., Phillipsdale, R. I.

BILLETS (Die Stock Steel)
Andrews Steel Co., The, Newport, Ky.
Hausman & Wimmer Co., The, First National Bank Bldg., Pittsburgh, Pa.

BILLETS (Forging)
Andrews Steel Co., The, Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Alloy Steel Corp., Massillon, O.
Hausman & Wimmer Co., The, First National Bank Bldg., Pittsburgh, Pa.
Heppenstall Forge & Knife Co., 47th and Hatfield Sts., Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BILLETS (Re-Rolling)
Andrews Steel Co., The, Newport, Ky.
Hausman & Wimmer Co., The, First National Bank Bldg., Pittsburgh, Pa.

BILLETS (Slabs)
Hausman & Wimmer Co., The, First National Bank Bldg., Pittsburgh, Pa.

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